THE IRON TRADE REVIEW

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SLOW PROGRESS

WAS MADE DURING THE MONTH OF SEPTEMBER.

Large Contract for Railway Steel Spring Material—Considerable Selling of Pig Iron in the East.

September has been a month of slow progress. While the advance made during the preceding three months has been maintained, little more has been accomplished. The belief in the trade is general that there will be no important developments until after the election.

Plates, Wire and Pipe

The steel plate situation is somewhat improved as to prices, but the demand is not strong. The demand for wire products, although unfavorably affected by weather conditions, continues fair. The contract for 3,000 tons of cast iron pipe for the city of Cleveland was awarded to the United States Cast Iron Pipe & Foundry Co. Business in merchant pipe is good. The sheet situation shows less irregularity as to prices.

Coke and Old Material

Rain during the past week was not heavy enough to be of much benefit to the coke regions, and many plants are facing the probability of being compelled to cease operations. There is more inquiry for furnace coke for next year's delivery, but sellers are not disposed to make contracts so far in advance. The old material market is quiet, but prices are being well maintained.

Sales of Pig Iron

Sales of pig iron made by a few interests in the East have aggregated about 75,000 tons, but the buying is not general. The market in the Central West has been extremely quiet, but it is understood that a large Pittsburg interest, which has just bought 2,000 tons, is figuring on making a contract to cover its requirements for basic for a long period. Southern prices are firm, and in competition with the northern product, are higher for many delivery points.

Structural Material

The cold weather has had a tendency to hasten building operations, and there have been many calls for delivery on contracts, but few new orders have developed. Specifications against steel bar contracts have been coming in freely, especially from large consumers. It is estimated that steel bar mills are now operating at about 60 per cent of normal capacity. There is still considerable competition from re-rolling mills. It seems probable that a larger fruit crop than was expected will offset the injury resulting from drouth to the tomato crop, but the full effects of the weather on crops will not be shown in the tin plate market for about a month.

Railway Buying

An important contract involving 25,000 tons of steel, chiefly in the form of billets suitable for the manufacture of railway springs, has been made with the Inland Steel Co., Chicago. The order for 5,000 cars for the St. Paul railroad will call for nearly 15,000 tons of steel structural material. The axles will be of iron. Bids for the main building of the Chicago & Northwestern terminal at Chicago, involving about 4,200 tons instead of 12,000 tons as originally estimated, will be opened this week. There is a fair demand for light rails, but very few orders for standard sections are being received.

BASIC PURCHASED.

Pittsburg, Sept. 30.—The Pittsburg Steel Co., has purchased about 2,000 tons of basic for October delivery; price not announced.

RUMORS OF COMBINES

Are Persistent in England—Crisis in Malleable Iron.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Sept. 19.

The air is full of rumors of combinations, and it is clear that the holidays have been followed by renewed negotiations. The combination of structural engineers initiated some time ago has been strengthened by the inclusion of several Scotch firms. The great firm of Sir William Arrol, Ltd., is still standing out, preferring to have a free hand. Scotch steel makers are being appealed to to make a concession of five shilling a ton on all contracts placed by the association, but so far they have declined. Apparently they want a reliable assurance that henceforward the engineers will buy at home and not go to the continent.

Some time during the present month there is to be a conference in London of joist makers, representing the United Kingdom, Belgium, France and Germany. The main features of the scheme provide for the allocation of all orders in the country, the British colonies and India to British houses and orders from other markets to makers on the continent. The continental makers are showing some shyness owing to the value of the British market which they largely supply. But as competition has lately forced down prices and profits, it is expected they will eventually accept the arrangement suggested.

The malleable iron trade has lately been passing through a mild crisis. For some years an understanding as to selling prices existed between the firms, but recently, new firms have come into the trade, and have undersold the old houses by 2s 6d to 5 shillings a ton. This for a time compelled the associated makers to drop their agreement, and with a view of forcing the hand of the new competitors, prices actually came down £2 a ton. This seems to have stimulated reflection on the part of the newcomers, who have at last agreed to join, and the immediate effect has been a rise of 5 shillings in practically all sorts of malleable iron to be followed by others.

THE WEEK IN IRON CENTERS

PITTSBURG.

Little Progress Made During September—More Activity in Pig Iron.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Sept. 29.

At the present stage of business recovery, there is little to be added on the progress side of iron and steel products. Beyond two or three lines, there are no clearly-defined movements that afford assurance of the restoration of normal activity in the near future. The market has taken on a waiting aspect, pending a further clearing of the atmosphere.

Though the month of September did not show any marked increase in the tonnage that came to the mills, the new level of operations reached by a somewhat consistent advance in June, July and part of August, was fully sustained. Thus while those iron and steel makers who anticipated larger resumptions with the coming of fall have not had their expectations fulfilled, they are finding source for satisfaction in the even tenor of the business being regularly booked. The more conservative manufacturers now look to no earlier than next spring to re-establish the industry upon its former basis.

An analysis of conditions shows the general trade exclusive of the railroads to be consuming practically all the tonnage that could reasonably be expected under the unsettled state of affairs prevailing. It is significant that merchant pipe, sheets and wire products, of which the consumption of the railroads is inconsequential, are displaying the most uniform improvement. But, whether or not the apathy of the railroads with their far-reaching influence is largely responsible for deterring the advance of the market, there are indications that no substantial buying may be expected from this source for some time. Practically nothing has yet been done as to negotiating with the mills for rails for 1909 delivery. Ordinarily this matter is taken up at an earlier season. The fact of the presidential year, however, has undoubtedly had a part in delaying negotiations in addition to the open question whether the roads are yet in shape, financially, to take on the additional burden.

The past week has brought some rain to the drouth-stricken coke regions and to the manufacturing river valleys, but this has not been sufficient to afford relief. Unless a good rainfall is received shortly, some important coke interests in the main Connellsville district will be obliged to close their plants.

Pig Iron.—In some degree the past week has been more active in pig iron, but the market still lacks tone. While reports of low prices, particularly in foundry iron, are not so common, it is significant that the market is gaining no strength. Business conditions do not appear to be defined sufficiently to warrant melters buying for extended deliveries, and some of them are purchasers only when prices are made attractive. The general market level of No. 2 iron for the last quarter appears to be about $15.25 Pittsburg, or $14.35 valley. Sales are reported both above and below this figure, but special conditions have usually attended these transactions. Some iron is being sold for first half delivery, one lot of 500 tons of No. 2 having been closed the past week. For this delivery, from $15 to $15.25 furnace is asked, but the furnaces willing to quote on such future business are in the minority. Steel making iron is quiet. A sale of note just made is 2,000 tons of Bessemer to a Canadian steel interest. The iron is reported to have come from the valleys at a delivered price of about $18 or $15 furnace. One inquiry for 1,000 tons of basic from central Ohio is out. A lot of 900 tons of malleable for last quarter brought $14.80 valley furnace, but the iron was special grade. The malleable market ranges from $14.25 to $14.50 furnace. Operations of steel making furnaces in the valleys have been increased by the blowing in of the new Brier Hill stack on Bessemer and Shenango No. 4, which went in on basic Sept. 29. The summary shows 13 merchant furnaces including Dover out of a total of 18 furnaces in the valleys to be now active. Stocks of Bessemer and basic in the valleys are not showing much change. For prompt and last quarter shipment on northern iron we quote as follows:

Bessemer, valley	$15 00 to 15.25
Bessemer, Pittsburg	15.90 to 16.15
No. 1 foundry, Pittsburg	15.60 to 16.10
No. 2 foundry, Pittsburg	15.25 to 15.50
Gray forge, Pittsburg	14.65 to 14.90
Basic, valley	14.25 to 14.50
Basic, Pittsburg	15.15 to 15.40

Ferro-Alloys.—The market is not so active as it has been. An inquiry for 300 tons of ferro-manganese is before sellers. A local steel company this week took a carload of 50 per cent ferro-silicon under $67, the general market level. Foreign makers of the lower grades of ferro-silicon are quoting under the domestic. We quote standard ferro-manganese at $43 to $44 seaboard, and $44.95 to $45.95 Pittsburg.

Imported 50 per cent ferro-silicon is quoted $67 Pittsburg on forward deliveries; domestic 12 per cent, $27; 11 per cent, $26; 10 per cent, $25. These quotations are applicable to Pittsburg territory.

Plates.—Little change is being shown in plate conditions, and in a general respect the situation is not making much progress. The report that the Carnegie Steel Co. had received an order for 80,000 tons of plates for new vessel construction of the Pittsburg Steamship Co., is officially denied. The company is now furnishing 10,000 tons of plates for two freighters as previously stated. The plates required for the 20,000 tons of gas pipe ordered of the National Tube Co. by the Columbia Gas & Electric Co., will come from the National's own mills since Bessemer skelp is required. Shading of prices is being done on the lighter gages of plates. We quote:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.60c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—There is a good amount of sheet business current, but it is almost entirely of the quick delivery variety. Jobbers are taking some tonnage for stock, but this demand is not heavy. There has been a fair call for corrugated sheets for mill construction, and inquiries for over 500 tons of this material including 125 tons for Gary, Ind., are now before the trade. Among the orders recently placed have been 75 and 125 tons respectively, for the new mill of Spang, Chalfant & Co., and A. M. Byers Co., and 500 tons for re-roofing the plants of the Pressed Steel Car Co. in this territory.

This latter order, which was mentioned last week, did not go to the American Sheet & Tin Plate Co., as had been reported from some sources, but was taken by the American Rolling Mill Co. Mill operations are not so favorable this week. There is less shading in galvanized grades. We quote:

Black steel sheets, cold rolled, No. 28 gage, $2.50 per 100 pounds, and galvanized sheets, No. 28 gage, $3.55 per 100 pounds, plus the regular extras.

Blue annealed: Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation; and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Jobbers are allowed $1 a ton from these prices.

Tin Plate.—Although the drouth has manifestly injured the tomato crop and has affected the prospects for canners and tin plate makers, there are indications that this damage may be off-set by a larger fruit crop. The effect of these crops upon the tin plate market will be definitely known in about a month. Some contracts for next year's delivery were closed by the leading interest the past week, but the main movement in this line is expected a little later in the year. Mill operations are not expected to show any increase this year. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—The prospects for the ordering by the steam roads of rails for next year's delivery are no better defined. In addition to the business depression and the reluctance of the roads to incur expenditures, a deterrent effect on contracting is apparent from the fact that this is a presidential year. Rail buying in presidential years in the past has usually been delayed until the outcome of the election was assured. The Pennsylvania system has taken the estimates of its probable 1909 rail needs from its various lines, but as yet made no move toward closing a contract with the mills. Light rails are fairly active, the Carnegie Steel Co. having booked 2,500 tons this week. The three mills of this company at the Edgar Thomson works are working but are gaited. Rerollers are asking $23.50 to $24 for 25-pound sections. On present specifications on Bessemer rails we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—Fair specifications are being received against billet contracts based upon the price of Bessemer iron, which are netting some advantage over current market prices. New business, as is to be expected, is light, but a northern Ohio interest is inquiring for prices on from 3,000 to 5,000 tons. Sheet and tin bars are fairly active.

Bessemer and open-hearth billets, base sizes, are quoted at $25 Pittsburg, and forging billets at $27 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $27.50 Pittsburg, valley and Wheeling territory, and $27 Pittsburg for delivery to other points.

Hoops, Bands and Cotton Ties.—Comparatively quiet conditions are prevailing in hoops and bands owing to the active season not being at hand. We quote:

Cotton ties, 87½c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 90½c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 1.80c; in less than carload lots, 1.90c; bands, 1.40c, base half extras as per standard steel.

Merchant Bars. — Specifications against steel bar contracts have been received in encouraging volume during the past several weeks, the large consumers particularly taking heavier tonnage. It is estimated that the steel bar mills are now operating at from 58 to 60 per cent of normal capacity. The competition of the rerolling mills in some lines of steel specialties is close. The bar iron situation has gained little strength, but prices are quite uniform. There is a local inquiry out for 150 tons. We quote:

Common iron bars, 1.40c Pittsburg in carload lots and over; 1.45c in less than carloads; 1.32c to 1.35c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.40c; plow and cultivator, 1.40c; channels, angles, zees, tees, under 3 inch, 1.50c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting 57 per cent in carloads, and 52 per cent less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.60c base. Iron finished tire under 1½ by ½ inches, 1.55c, plus ½ extras on tire card; iron finished tire, 1½ by ½ and over, 1.40c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch thicker, we quote base prices per 100 pounds, $3.35 on hard, and $3.60 on soft.

Structural Material.—The lower prices prevailing, especially in fabricating lines, are causing some prospective investors to regard the present as an opportune time for advancing building projects. Not a great number of new jobs are being placed, however. From the standpoint of fabricators, conditions are unsatisfactory because of the close figuring. The Joseph Horne Co., of this city, which has taken bids on the general contract of erecting a large addition to its store, is expected to make an award shortly. This building will require about 3,000 tons. A new Y. W. C. A. building, 1,000 tons, at East Liberty, this city, is also expected to go ahead at once. No award has yet been made on the general contract for the Mercer county court house, this state, which will take about 500 tons. We quote:

Beams and channels, 15-inch and under, 1.60c; over 15 inches, 1.70c; zees, 1.60c; tees, 1.65c; angles from 3 to 6 inches, 1.60c; over 6 inches, 1.70c; universal and sheared plates, 6¼ inches and wider, 1.60c base.

Merchant Pipe.—New business is coming out in a steady volume and there is continued specifying by jobbers for stock purposes, largely in merchant pipe. This latter movement is not general, but is nevertheless gratifying, as it is indicative of an awakened interest on the part of these buyers. Oil field goods do not seem to be as active, but inquiries are regularly appearing, including one for six miles of 2-inch pipe for West Virginia. The Kansas Gas & Cement Co. has closed for 20 miles of 6-inch pipe for Kansas delivery. Prices on both iron and steel pipe are firm. Considerable skelp is being sold, but there is no fixed market, as prices are entirely dependent upon the attractiveness of orders. We quote the following official base discounts with an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
¾ to 6 inches....	75	65	73	63

Boiler Tubes.—While business conditions with boiler makers have improved somewhat, there is little change in the boiler tube market. This

trade is buying carefully and the demand from railroads is light. We quote the following official base discounts to the general trade:

BOILER TUBES.

	Iron.	Steel.
2¼ to 5 inches.....	52	65

Wire Products.—More tonnage in wire products is being placed by both manufacturers and jobbers, the past week having been notable in this respect. There is little evidence of any stock orders being placed, however, and the output of the mills appears to be going directly to consumption. Despite some rumors to the contrary, prices seem to be firmly held. We quote:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15c, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c; and to retailers in carloads, 1.85c.

Wire Rods.—Some new business in rods is being taken and prices are steady. We quote $33 Pittsburg on Bessemer and $34 Pittsburg on open-hearth rods.

Coke.—Although there was some rain in the coke regions during the past week, the scarcity of water still continues. The drouth is particularly severe in the Greensburg district, where water is being hauled to operations. If no copious rains come within the next several weeks, it is probable that some operations in the main Connellsville basin will be obliged to shut down. There is more inquiry for furnace coke, a number of interests asking prices for next year's delivery and some sales have been made, although operators generally are not anxious to sell so far ahead except at their own figures. The prices of $2 ovens for first half and $1.75 ovens from Oct. 1 on, are generally considered the market. We quote standard 72-hour coke at $2 to $2.25 ovens for any delivery. The *Courier* for the week ending Sept. 19 reports a production in the Connellsville regions of 201,485 tons with 18,213 ovens active and 19,257 ovens inactive as against 195,974 tons the previous week with 17,967 ovens active and 19,503 ovens inactive.

Old Material.—The market in old material is rather dull, as the demand from consumers is usually in odd lots and the dealers are not so determined in their efforts to buy up most of the offerings. The advance in prices appears to have been checked, although the market is quite firm at the present level. The Pittsburg Steel Co., which has been a heavy buyer of scrap, is still taking some tonnage. The railroads are presenting light accumulations for dealers' bids. We quote as follows gross tons, delivered in the Pittsburg district:

Heavy melting scrap, $14.25 to $14.75; re-rolling rails, $15.50 to $16.50; bundled sheet scrap, $12 to $12.50; iron axles, $20.50 to $21; old iron rails, $17 to $18; No. 1 wrought scrap, $15.50 to $16; old car wheels, $14.75 to $15.25; low phosphorus, $18 to $18.50; machine shop turnings, $9.25 to $9.75; cast borings, $8.50 to $9; No. 1 cast scrap, $14 to $14.50; malleable, $14.

CHICAGO.

New Cars Call for Large Steel Tonnage—Pig Iron Quiet.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Sept. 29.

The Chicago, Milwaukee & St. Paul railroad financed the extension of its line to the Pacific coast many months ago and the purchases it is making now cannot be taken, therefore, as indications of increased railroad buying following the retrenchment of the panic period. At the same time, the placing of the contract for the underframes of 5,000 cars with the Bettendorf Axle Co. this week cannot but be helpful in a number of directions. This contract will involve the purchase of close to 15,000 tons of structural steel. Other structural steel demands of the week were moderate and much of the tonnage in prospect still remains unplaced. The reduced requirements of the Chicago & Northwestern Ry., for which bids are being invited this week, are somewhat disappointing from the standpoint of tonnage. A gratifying increase in the volume of sheet tonnage moving, particularly galvanized, is noted and a more satisfactory condition with regard to prices for plates is reported. The light rail business continues very good, which is in decided contrast to the situation with respect to standard sections. Steel bars are moving on specifications well up to schedule, but bar iron is very quiet. Merchant steel is being ordered in somewhat increased quantity, both for direct consumption by manufacturers and for replenishing jobbers' stocks. The wire trade, while feeling the affects of the dry weather and fires, holds up very well. The scrap market is less pronouncedly bullish and prices bid on railroad offerings show material declines on some products.

Pig Iron.—The pig iron market locally has been exceedingly quiet throughout the week. In the matter of tonnage, transactions have been restricted to carload lots and for delivery in this territory sales of even a few hundred tons have been almost entirely lacking. Deliveries of southern iron on contract show an increasing number of hold-up requests, but carload business continues to be accompanied by a demand for hurried shipment. For southern iron the accepted price for first quarter delivery is now $13 for No. 2 at Birmingham, but little business is being placed. Through the remainder of the year iron is selling at 50 cents under that figure. Southern furnaces are in fairly good shape, however, and are not crowding possible buyers. In the north the movement of any considerable tonnage has been so long delayed and the price has ebbed to such a low level that a considerable buying movement would seem almost due. If any such buying is in store, present indications point to a deferment until after the election, at least, for the general uncertainty connected with that issue has become a very definite component in the market sentiment. For the rest of this year, northern iron will be sold freely at $16.50, local furnace, and at an advance of 50 cents over that price for first quarter. Lake Superior charcoal is selling for from $19 to $19.50 for the remainder of the year. We quote as follows:

Lake Superior charcoal.....	$19.50
Northern foundry No. 1.....	17.00 to 17.50
Northern foundry No. 2.....	16.50 to 17.00
Northern foundry No. 3.....	16.00 to 16.50
Southern foundry No. 1.....	17.35 to 17.85
Southern foundry No. 2.....	16.85 to 17.35
Southern foundry No. 3.....	16.35 to 16.85
Southern foundry No. 4.....	15.85 to 16.35
Southern No. 1 soft.....	17.35 to 17.85
Southern No. 2 soft.....	16.85 to 17.35
Southern gray forge	15.60 to 16.10
Southern mottled	15.35 to 15.60
Southern silveries, 4 per cent silicon	17.85 to 18.35
Southern silveries, 5 per cent silicon	18.35 to 18.85
Southern silveries, 6 per cent silicon	18.85 to 19.35
Jackson Co. silveries, 6 per cent.	19.40 to 19.90
Jackson Co. silveries, 8 per cent.	20.40 to 20.90
Jackson Co. silveries, 10 per cent	21.40 to 21.90
Malleable Bessemer	17.00 to 17.50
Standard Bessemer	17.65 to 18.15
Alabama Basic	16.85 to 17.35

Billets and Rods.—The sales of carload lots of forging billets are reported by the Cambria Steel Co., and this is the general character of the tonnage moving, which is very scattered. The axles for the 5,000 Chicago, Milwaukee & St. Paul railroad cars will be of iron instead of steel and the billet market will not be affected thereby. There is nothing of interest to report with regard to the movement of wire rods. We quote for 4 x 4 inch rolling billets, $26.50 and forging billets, $28.50

base, Chicago. We quote f. o. b. Pittsburg, Bessemer wire rods, $33; open-hearth, $35 and chain rods, $33.

Merchant Steel.—Bar iron is very quiet with the price steady at 1.50c Chicago. Specifications on steel bar contracts are very fair, though the drouth has affected all agricultural industries adversely. The demand for merchant steel, sleigh shoe, cutter shoe and tire steel, has been very good both from manufacturers and jobbers and one company reports a very decided improvement in the tonnage of this material sold in September as compared with August. We quote Chicago delivery as follows:

Bar iron, 1.50c to 1.53c; soft steel bars and bands, 1.58c, half extras; soft steel angles, less than 3 x 3, 1.68c; hoops, 1.98c base, full extras; planished or smooth finished tire steel, 1.78c; iron finish, up to 1½ x ½-inch 1.73c base tire card; iron finish, 1½ x ½-inch and larger, 1.58c base steel card; channel for solid rubber tire, ¾ to 1-inch, 2.08c, and 1⅛-inch and larger, 1.98c; smooth finished machinery steel, 1.83c; flat sleigh shoe, 1.63c; concave and convex sleigh shoe, 1.83c; cutter shoe, 2.05c; toe calk steel, 2.13c; railway spring, 1.93c base steel card; vehicle spring steel, 1.98c base, vehicle card; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.90c to 2c, full extras; soft steel bars, 1.80c per 100 pounds base, plus half extras; soft steel hoops, 2.30c, full extras.

Plates.—The local plate business is very meager. The tonnage available is made up almost entirely of miscellaneous small orders of plates for structural work. There has been less of the reported weakness in prices on plates during the past week than existed previously and this may be accounted for in part at least because of the heavy ordering of steel cars by the various railroads. It is a significant fact that in almost every instance the railroads have ordered their maximum requirements rather the minimum. We quote as follows:

Plates, ¼-inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.78c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼-inch and heavier, up to 72 inches wide, 2c to 2.10c; from 72 to 96 inches wide, 2.10c to 2.20c; 3/16-inch up to and including 60 inches wide, 2.10c to 2.15c; 72 inches wide, 2.35c to 2.45c; No. 8, up to 60 inches wide, 2.10c to 2.15c. Flange and head quality, 25c extra.

Sheets.—During the past week or two, galvanized sheets have been perhaps the most active of the finished products and the local mills find themselves fairly well provided with specifications for a good run on this product. Prices are correspondingly firmer. Other grades of sheets, while moving less freely, constitute one of the stronger features of the market but are limited in their movement by the general unwillingness of jobbers to accumulate anything like normal stocks. We quote store prices Chicago delivery as follows (for mill prices see Pittsburg report):

No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, No. 10 to 16, 3.05c to 3.10c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c.

Structural Steel.—The transaction of leading interest locally was the letting of the contract for the steel underframes of 5,000 cars for the St. Paul road to the Bettendorf Axle Co. The contract will involve from 12,000 to 15,000 tons of steel and calls for the first shipment of underframes to the railroad in 40 days and at the rate of 26 per day until the completion of the contract. The order covers the building of the sills and center frames for which long I-beams will be used and the trucks which will be built of short beams. Of the structural projects mentioned a week ago only the contract for the Chicago Musical College has been let. This, involving 1,316 tons, was awarded to Hansell, Elcock & Co., Chicago, and Bethlehem sections were specified. Hansell, Elcock & Co., were also awarded the contract for 550 tons for the Exchange National Bank at Colorado Springs, Colo., and likewise the contract for the Spalding Merrick building which had been up for bids before and was finally let with a much reduced tonnage. The Wyeth Hardware & Mfg Co., St. Joseph, Mo., has awarded the contract for 533 tons of steel for its new building to the Berry Foundry & Mfg. Co. of that city. The American Bridge Co. received in the local office of miscellaneous lots about 600 tons and of specifications on railroad contracts from 1,200 to 1,500 tons. The bids for the steel in the main building of the Chicago & Northwestern terminal will be opened on Thursday of this week. The umbrella train sheds are not included in this letting and the tonnage will amount to about 4,200 tons instead of 12,000 as originally estimated. It is understood that Bethlehem sections are specified.

The situation as regards prices is not very satisfactory and we quote as follows:

All angles, 3 inches and larger, including 6 inches, $1.95 per 100 pounds; angles over 6 inches, $2.05 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.95 per 100 pounds, base; channels, 3 inches and larger, $1.95 per 100 pounds, base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—The demand for light rails continues and the leading interest will dispose of some 4,000 tons in the current month, which is about the equal of the tonnage moved in August. In respect to the heavier sections, the situation is far from comforting. Specifications on contracts for track supplies are being received in fair volume, but prices on bolts are not very firmly intrenched. We quote as follows:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $26; 20-pound, $27; 16-pound, $28; 12-pound, $29. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.10c to 2.20c; with hexagon nuts, 2.25c to 2.35c. Small railroad and square boat spikes, 1.90c base, f. o. b. Chicago.

Merchant Pipe and Boiler Tubes.—The demand for tubular products is not as heavy relatively as it should be at this season when the territory reached by water routes will soon be inacessible on a low freight rate. Jobbers show no intent to increase the quantity of material carried in stock and the only large outside inquiry was one from the Illinois Central railroad for boiler tubes.

We quote mill discounts, Chicago delivery, carload lots, as below. On steel pipe jobbers are allowed a concession of one point and 5 per cent additional from the schedule in force.

	—Steel—	
	Black.	Galv.
¾ to 6 inches, inclusive.....	73.2	63.2
7 to 12 inches, inclusive.....	70.2	55.2

BOILER TUBES.

	Steel.	Iron.	less.
2¼ to 5 in., inclusive....	63.2	50.2	50.2

Mill quotations on iron pipe are three points higher than the foregoing prices.

We have revised our prices from store, as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	—Steel— Black.	Galv.
⅛ to ¼ inch	65	49
⅜ inch	67	53
½ inch	69	57
¾ to 6 inches	73	63
7 to 12 inches	69	54

Store prices for wrought iron pipe, carload lots, from Chicago stock, are as follows: One-eighth to ¼-inch, 61; ⅜-inch, 63; ½-inch, 65; ¾-inch to 6 inches, 70; 7 inches to 12 inches, 67. Boiler tubes from store are unchanged at 60 off.

Cast Iron Pipe.—The week was a very quiet one in the matter of lettings of cast iron pipe. The letting of the 800 tons at Hamilton, O., for which the Lynchburg, Va., Foundry Co., was the low bidder is contingent upon the sale of bonds Oct. 15. The 3,000 tons at Cleveland and 200 tons at Hammond, Ind., will be furnished by the United States Cast Iron Pipe & Foundry Co. A contract for 200 tons for Holly, Colo., was also let. Two lettings each for 300 tons at Decatur, Ill., and Winfield, Kas., will close this week. The demand in territory reached from the south is decidedly stronger than in the north and prices are correspondingly stiffer. We quote for Chicago delivery as follows: 4-inch pipe, $27; 6 to 12-inch, $26; larger sizes, $25; gas pipe, $1 a ton higher.

Wire Products.—Although perceptibly affected by the abnormal conditions of drouth and fire that have menaced the farming sections in the past few weeks, the wire goods trade holds up very well and the movement to all of the western territory is in good volume. Manufacturers' demand for fence wire has been especially good. We quote as follows:

Wire nails, jobbers' carload lots, $1.95; retailers' carload lots, $2; painted barb wire, jobbers' carload lots, $2.10; retailers' carload lots, $2.15, with 30c for galvanizing; plain wire to jobbers in carloads, 1.80c; and to retailers in carloads, 1.85c.

Old Material.—With most of the local mills out of the market for scrap and the few who are still willing to take on small tonnages picking up only what can be obtained at bargain prices, some slight weakening of prices may be noted in the face of conditions that improve more slowly than was anticipated. We note that while No. 1 railroad wrought was quoted last week at from $14 to $14.50, in the interim the highest price that the Chicago, Burlington & Quincy was offered in this territory was $13.85 and the material was sold elsewhere. This week No. 1 was offered at $14 East Chicago and No. 2 at $12.50. In anticipation of the needs of the Chicago, Milwaukee & St. Paul road in connection with the iron axles for its large car order, the price on the material stiffened, but rerollers are weaker with the complete absence of demand. The Great Northern railway has issued a list which closes Oct. 6, offering 10,000 tons, of which 4,300 tons is old iron rails, 1,300 tons is rerollers and 1,150 tons is wrought iron. Because of the stronger scrap market in St. Louis at the present time, it is expected that but little of this list will come to this market. We have revised our prices and quote gross tons in the first paragraph:

Old car wheels	$15.25 to 15.75
Old iron rails	18.00 to 18.50
Re-rolling rails (4 ft. and over)	15.50 to 16.00
Old steel rails (4 ft. and under)	14.75 to 15.25
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	13.50 to 14.00
Heavy melting steel	13.00 to 13.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$13.50 to 14.00
No. 2 R. R. wrought	12.50 to 13.00
Knuckles, couplers and springs	13.00 to 13.50
Shafting	16.00 to 16.50
Iron car axles	20.00 to 20.50
Steel car axles	17.25 to 17.75
Dealers' forge No. 1	10.50 to 11.00
Pipes and flues	9.75 to 10.25
No. 1 cast, 150 lbs. and less	13.25 to 13.75
No. 1 mill	8.00 to 8.50
Mixed busheling (Nos. 1 and 2)	8.00 to 8.50
Country sheet	4.50 to 5.00
No. 1 boiler cut	8.50 to 9.00
Boiler punchings	11.50 to 12.00
Cast borings	5.25 to 5.75
Mixed borings, etc	5.25 to 5.75
Machine shop turnings	7.00 to 7.50
Railroad malleable	12.25 to 12.75
Agricultural malleable	11.00 to 11.50
Stove plate and light cast scrap	11.50 to 12.00
Old iron splice bars	16.75 to 17.25

CLEVELAND.

Cast Iron Pipe Contract—Large Inquiry for Basic Pending.

Office of THE IRON TRADE REVIEW,
Browning Building, Sept. 29.

Iron Ore.—Owing to the smoke and fog, the past week has been very unfavorable for navigation on the lakes, and a number of vessels are laid up for repairs. It is expected that the shipments for September will be about the same as those for August. Buyers have shown very little interest in the market during the past week, and only moderate sales have been made.

On base ores, with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi Bessemer, $3.50.

Pig Iron.—An important Pittsburg interest is in the market for a large tonnage of basic, but, with this exception, no business of large volume is pending. In order to avoid buying pig iron, some of the leading foundry interests have been cleaning up all the scrap available about their premises, and an unusual percentage of scrap has been used of late. Some foundries are showing a disposition to buy for the first half of the year, but sellers are slow to quote for that delivery. We quote, f. o. b. Cleveland, as follows:

Bessemer	$15.90 to 16.15
No. 1 foundry	15.40 to 15.80
No. 2 foundry	15.25 to 15 50
No. 3 foundry	14.90 to 15.25
No 2 southern	16 35 to 16.85
Gray forge	14.00 to 14.50
Lake Superior charcoal	19.50 to 20.00

Coke.—The market in both foundry and furnace grades is very quiet, and prices are unchanged. We quote spot furnace coke at $1.50 to $1.60, and on shipments over the remainder of the year, $1.70 to $1.80. Foundry coke is quoted at $2 to $2.25, for both prompt and forward delivery.

Finished Material.—Both mills and jobbers report that September sales will make a total somewhat greater than that of August, but the increase is not heavy. The sheet business shows considerable irregularity, prices being fairly well maintained for a week or two, after which new weakness will develop. The recent touch of cold weather serves as a reminder of approaching winter, and it has caused numerous letters to be written urging the prompt delivery of structural material on contracts, but very little new business has been placed. The city of Cleveland has awarded the contract for 3,000 tons of cast iron pipe to the United States Cast Iron Pipe & Foundry Co.

Old Material.—There has been some movement of material to the mills in the Cleveland district, but only in enough quantity to satisfy immediate needs. No changes in price have been noted during the week, and the general conditions remain unsettled. The suggestion has been made that the mills might purchase in larger quantities direct at possibly lower prices, but there has been no tangible evidence this last week that such might be the case. We continue to quote, f. o. b. Cleveland, as follows:

Old iron rails	$16.50 to 17.00
Old steel rails (re-rolling)	15.00 to 15.50

Old steel rails (under 6 ft.)..	15.00 to 15.50
Old car wheels.....	15.00 to 15.50
Old steel boiler plate	12.50 to 13.00
Steel axles	18.00 to 18.50
Malleable iron (railroad).....	13.00 to 13.50
Malleable iron (agricultural)....	11.50 to 12.00
Heavy steeel	13.75 to 14.25
Country mixed steel.....	12.00 to 12.50
Low phosphorus	16.00 to 16.50
We quote, net tons, as follows.	
No. 1 R. R. wrought.....	13.50 to 14.00
No. 1 busheling.....	12.00 to 12.50
No. 1 machine cast.....	12.00 to 13.00
Iron axles	17.00 to 18.00
Axle turnings	9.50 to 10.00
Machine shop turnings	7.50 to 8.00
Grate bars	11.00 to 11.50
Pipes and flues	11.00 to 11.50
Tank iron	11.00 to 11.50
Hoop and band iron.....	8.00 to 8.50
Sheet iron	6.00 to 6.50
Wrought drillings	7.50 to 8.00
Stove plate	11.00 to 11.50
Cast borings	7.00 to 7.50

CINCINNATI.

Northern Furnaces Taking Orders in Competition With Southern.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., Sept. 29.

Pig Iron.—Dullness continues to prevail in the pig iron market in this territory. It is generally believed that buyers are covered for the remainder of the year and that purchases for next year are held up pending the result of the elections. Inquiry is light and but few calls for prices on foundry iron are represented in the mail. The leading cast iron pipe interest is said to be negotiating for some southern foundry iron, and is reported to have purchased some northern during the week. A northern Ohio melter is in the market for some basic, the inquiry calling for 500 tons for delivery this year and 500 tons in the first quarter of next year. There is a general inquiry from a southern Ohio melter for 2,000 tons of malleable for delivery in the second quarter of next year. It is reported that a Central Ohio manufacturer bought some iron during the week, but the sale does not seem to have been made through this market. Prices are without change and southern producers continue to demand $12.50 to $13 Birmingham for No. 2 foundry and southern Ohio interests openly quote $14.75 at furnace. For first quarter of next year, the southern producers ask $13 Birmingham and the northern furnaces quote $15 at furnace. These are minimum figures and some producers are asking above these prices. Southern iron at present is higher than northern in most of this territory and when an inquiry develops for foundry iron the order usually goes to the nearest northern furnace, as northern furnace prices are regarded as so near the cost line that they cannot stand any shrinkage to overcome differences in freight rates. The melt appears to be slightly increasing, but not to an extent which would have an effect upon the market. The lack of interest on the part of buyers and the dullness prevailing give the situation a weak undertone, but northern iron is believed to be close to the cost line and southern furnaces have enough tonnage booked to satisfy them for the present. If consumers are as well covered as they seem to be it is believed that but little can be expected in the way of a change in market conditions in the near future. We quote for prompt shipment and rest of the year, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

Southern foundry No. 1.....	$16.25 to 16.75
Southern foundry No. 2.....	15.75 to 16.25
Southern foundry No. 3.....	15.25 to 15.75
Southern foundry No. 4.....	14.75 to 15.25
Southern No. 1 soft.....	16.25 to 16.75
Southern No. 2 soft.....	15.75 to 16.25
Southern gray forge	14.25 to 14.50
Northern No. 1 foundry.....	16.45 to 16.95
Northern No. 2 foundry.....	15.95 to 16.20
Northern No. 3 foundry.....	15.45 to 15.70
Northern 8 per cent silicon.....	19.70

Finished Material.—Specifications on contracts continue fairly good considering the general situation and the jobbing trade shows improvement over the recent past. Conditions have made no material change during the week. Small orders are filled here at the following prices:

Iron and steel bars, 1.85c to 2c, full extras. Angles, 3 x 3 and over, 2.10c to 2.25c; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼-inch and heavier, 2c; 3/16-inch, 2.10c; No. 8, 2.15c; sheets, blue annealed, No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c; and No. 28, 2.85c to 2.95c; boiler tubes, 2¾ to 5 inches, 62 per cent off base; turn-buckles, 45 per cent off, rivets, 3c base; cold rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

Coke.—The market is dull and prices are not quotably changed. Consumers are calling for coke on contracts in about the same volume as for the past several weeks. Spot coke is in light demand. Quotations in the leading coke producing districts are as follows:

	PER TON.
Wise county furnace coke.....	$1.75 to 1.85
Wise county foundry coke.....	2.10 to 2.25
Pocahontas furnace coke.....	1.60 to 1.75
Pocahontas foundry coke.....	2.00 to 2.25
Standard Connellsville furnace coke	1.75 to 1.80
Standard Connellsville foundry coke	2.00 to 2.25
Connellsville district furnace coke.	1.60 to 1.65
Connellsville district foundry coke.	2.00 to 2.25

Old Material.—There is not much interest in the market and prices remain steady. Railroad lists show offerings of only moderate tonnages and dealers do not appear to bid with much alacrity as they are carrying fairly liberal stocks. Dealers' prices to consumers are as follows:

Old No. 1 R. R. wrought, net tons	$11.50 to 12.50
Cast machine and fdy., net tons.	12.00 to 12.50
Old iron rails, gross tons.....	14.00 to 14.50
Old steel rails (re-rolling) gross tons	13.25 to 13.75
Old short lengths, gross tons....	12.50 to 13.00
Old iron axles, net tons.....	16.00 to 16.50
Heavy melting scrap, gross tons.	12.50 to 13.00
Stove plate, net tons	10.00 to 10.50
Wrought turnings	5.50 to 6.50
Cast borings, net tons	4.50 to 5.00
Car wheels, gross tons	13.50 to 14.50

PHILADELPHIA.

Forge Iron Sold—Recent Sales of Basic Make Prices Firmer.

Office of THE IRON TRADE REVIEW,
408 Central Trust Bldg., Sept. 29.

Pig Iron.—The same cast iron pipe interest that last week was reported as having purchased 6,000 tons of forge iron for delivery the remainder of the year has since ordered additional amounts aggregating 10,000 tons, or 16,000 in all, at prices ranging from $15.50 to $15.65. There have been no further sales of basic reported, the inquiry for 40,000 tons of delivery the remainder of this year and the first half of next not having developed into business. The recent heavy sales of basic have stiffened the price to a basis of $16, which includes delivery the first quarter. Inquiry and sales in the foundry grades have shown a noticeable falling off, but the forward movement of iron continues. Some of the furnaces are pretty well sold up to their capacity and in instances are even behind on orders. No. 2 furnace of the Warwick Iron & Steel Co., Pottstown, Pa., and No. 2 of the Richard Heckscher & Sons Co., Swedeland, Pa., have been put in blast. Virginia irons are quiet. We quote as follows, delivered in buyers' yard, eastern Pennsylvania and surrounding territory:

No. 1X foundry	$17.25 to 17.75
No. 2X foundry	16.75 to 17.25
No. 2 plain.....	16.25 to 16.75
Standard gray forge.....	15.50 to 16.00
Basic	16.00 to 16.50
Low phosphorus	21.00 to 21.50
No. 2 Birmingham.....	17.25 to 17.75
No. 2X Virginia	17.00 to 17.25
No. 2 plain Virginia.....	16.50 to 16.75

Finished Material.—There is no change in the finished material market and the situation continues about the same that it has been for several weeks past. We quote as follows: Structural material, 1.75c to 1.90c; plates, 1.75c to 1.80c; refined iron bars, 1.45c to 1.50c; steel bars, 1.55c.

Old Material.—There is little activity in this line and matters are running along at a dead level. We quote as follows, prices on No. 1 steel scrap,

choice No. 1 R. R. wrought and low phosphorus having been marked down and an advance of 50c noted in wrought iron pipe:

Old steel rails (re-rolling)	$16.50 to 17.00
No. 1 steel scrap	15.00 to 15.50
Old steel axles	21.00 to 22.00
Old iron axles	22.50 to 23.50
Old iron rails	20.00 to 20.50
Old car wheels	15.25 to 15.75
Choice scrap R. R. No. 1 wrought	18.00 to 18.50
No. 1 yard scrap	16.00 to 17.00
Machinery scrap	15.00 to 15.50
Low phosphorus scrap	18.50 to 19.00
Wrought iron pipe	14.50 to 15.00
No. 1 forge fire scrap	13.00 to 13.50
No. 2 forge fire scrap, ordinary	9.00 to 10.00
Wrought turnings	11.50 to 12.00
Axle turnings, heavy	12.75 to 13.25
Cast borings	10.75 to 11.25
Stove plates	13.00 to 13.50

The Philadelphia office of the Charles Dreifus Co, has been moved from the Real Estate Trust building to 501-503 Pennsylvania building.

BUFFALO.

Pig Iron Quiet With Little Prospect of Change.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, Sept. 29.

Pig Iron.—Quiet conditions prevail here in the pig iron market and there is no sign of immediate change so far as this city is concerned. Reports from down state indicate that business is in good condition. In several instances shops are running double turn with plenty of business ahead, but demand for pig has not been sufficiently strong to boost prices. They remain fairly firm, as for several weeks past, No. 2 foundry selling generally at $15.50. An order for 500 tons was placed with one furnace company this week at that price. Information was also received to the effect that one of the largest local shops bought one lot of 500 tons No. 2 at $15 delivered. The foundries are gaining slightly in amount of business and the owners believe there will be plenty of business within the next six months. We quote f. o. b. Buffalo as follows:

No. IX foundry	$16.00 to 16.50
No. 2X foundry	15.50 to 16.00
No. 2 plain	15.00 to 15.50
No. 3 foundry	15.00 to 15.50
Malleable Bessemer	16.00 to 17.30
Gray forge	14.75 to 15.25
Charcoal	20.25 to 20.75

Finished Products.—The Jones & Laughlin Steel Co. will fabricate 500 tons of structural steel to be used in the construction of the Peck & Warner office building of Syracuse. The contract was let by the Smith & Caffrey Co. of that city.

ST. LOUIS.

Conflicting Opinions Expressed—Some Inquiry for Malleable.

Sept. 29.

Pig Iron.—Opinions seem to differ regarding the condition of the pig iron market in the St. Louis territory. One firm asserts positively that increased buying of cars on the part of railroads indicates a much better feeling; that iron is firm at $13 to $13.50 Birmingham for No. 2, and no better prices are in sight for next year. Some dealers, according to this firm, will not quote price on iron for next year's delivery, and Birmingham firms talk of $14 prices. Other St. Louis dealers report the local market as quiet, with very little buying, except for spot delivery. Some few inquiries are out for delivery over the remainder of the present year and the first quarter of 1909, but buyers do not seem anxious to place their orders, believing that there will be little or no change in prices until after the presidential election. One sale of 400 tons of Ohio iron was made last week for shipment over the last three months of this year and the first three months of next year to a malleable plant in central Illinois. Another malleable plant is in the market for 2,000 tons of malleable Bessemer for shipment within six months from October or over a period of three months from Jan. 1. This tonnage probably will be closed during the present week. Another inquiry for 500 tons of northern iron for shipment during the first qarter of 1909 is out. Our quotations, delivered, to which the freight of $3.75 from Birmingham has been added, follow:

No. 1 southern	$16.75 to 17.25
No. 2 southern	16.25 to 16.75
No. 3 southern	15.75 to 16.25
No. 4 southern	15.25 to 15.75

Coke.—The market remains firm, with prices at $2.25 to $2.75 for the best selected 72-hour Connellsville foundry, ovens, the lower price being for shipment over the remainder of the year and the higher on contracts for delivery six months or one year hence. One of the largest stove foundries in St. Louis is about to close a contract for six months' or a year's requirements.

Virginia and West Virginia foundry coke is quoted at $2.25 to $2.50, ovens, and $1.75 to $2, ovens, for furnace. The rate on Connellsville coke to East St. Louis and St. Louis is $2.80, and $2.70 on Virginia coke when shipment is destined beyond St. Louis.

Old Materal.—The market remains firm, with quotations as follows:

Cast iron borings, free from foreign material, net ton	$ 6.00
Steel axle turnings, gross ton	12.25
Steel railroad axles, net ton	$17.50 to 18.50
Iron railroad axles, net ton	18.50 to 19.50
Miscellaneous steel scrap, gross ton	12.25
Old car wheels, gross ton	14.50 to 15.50
No. 1 railroad cast scrap, net ton	12.00 to 12.50
Heavy machinery cast, net ton	13.00
Stove plate and light cast, net ton	10.50
Sheet iron, net tons, uncut	5.00
No. 1 railroad wrought, net ton	11.00 to 12.00
Railroad malleable, net ton	11.50
Heavy melting steel, net ton	11.50

NEW YORK.

A Large Tonnage of Pig Iron Has Been Disposed Of.

Office of THE IRON TRADE REVIEW,
Room 1005, No. 90 West St., Sept. 29.

Pig Iron.—There has been steady and heavy buying in the east during the past 10 days, large tonnages of foundry, forge and basic being placed, and the buying movement is still on. A conservative estimate of the amount involved during this period is 75,000 tons, and this bids fair to be considerably increased before the end of the week. Although practically no sales have been made on a non-competitive basis, probably two-thirds of this tonnage was taken by one interest, although in the case of one purchaser lots of 4,000 tons were placed with each of four producers. The range of delivery is from prompt, one lot of some 5,500 tons being for practically spot, to first quarter. Although most of this business has been placed through this city, practically all is for consumption between the Hudson river and Harrisburg, about 35,000 tons being basic for eastern plants, largely in the Philadelphia field. An inquiry for 3,000 tons of analysis iron of two grades is pending for a concern up the river; otherwise the New York and New England market is without incident. A fair volume of small orders is being placed, and prices are being well maintained. We quote tidewater delivery last quarter, as follows:

Northern foundry No. 1	$17.00 to 17.50
No. 2X foundry	16.50 to 17.00
No. 2 plain	15.75 to 16.25
No. 2 southern foundry	16.75 to 17.25
Malleable	17.00 to 17.50
Basic	15.75 to 16.25
Gray forge	15.50 to 16.00

Ferro-Alloys.—A sale of 400 tons of ferro-manganese for western shipment is announced and there is a moderate volume of inquiry, the market level for early shipment being about $43, seaboard. Some 75 tons of ferro-silicon is under negotiation; the price is unchanged at $67 to $68, Pittsburg. There is a fair trade in ground alloys.

Finished Material.—Bar iron is no more active, but prices seem a shade higher. Other lines manifest little change, and we quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.76c; beams, 3 to 15 inches, 1.76c; tees, 3 x ¼-inch and heavier, 1.81c; plates, carloads, tanks, 1.76c; ma-

rine boilers, 2.16c; bar iron, 1.41c to 1.46c; soft steel bars, 1.56c; sheets, No. 28, black, 2.66c.

Old Materials.—Fairly active trading earlier in the month gave September a considerable aggregate tonnage, but the market has not been brisk during the past fortnight. No large transactions are reported, as yards are bare of any important stocks and no big tonnages could be filled promptly. Mills are buying from hand to mouth, and the melt shows little improvement. The outlook is so uncertain that dealers hesitate to run either long or short of the market. We quote, gross tons, New York delivery, as follows:

Old iron rails	$17.00 to 17.50
Old steel rails, re-rolling	14.00 to 14.50
Relaying rails	20.50 to 21.50
Old car wheels	13.50 to 14.00
Old iron car axles	18.00 to 18.50
Old steel car axles	17.00 to 17.50
Heavy melting steel	12.50 to 13.00
No. 1 railroad wrought	15.00 to 15.50
Iron track scrap	12.50 to 13.00
Wrought pipe	10.50 to 11.00
Cast borings	8.00 to 8.50
Wrought turnings	8.50 to 9.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	13.00 to 13.50
Stove plate	10.50 to 11.00
Grate bars	10.50 to 11.00

SEATTLE.

Business is Better; But Prices Have Not Changed.

Office of THE IRON TRADE REVIEW,
302 Pioneer Bldg., Sept. 25.

Pig Iron.—Inquiries and orders throughout Washington and Oregon are more numerous than for some time past, but whether or not the increased demand will be sustained cannot yet be determined. The market is stiffer but has not shown sufficient strength yet to change prices. No shipments of iron are expected at north coast ports before November. We continue to quote:

English soft No. 1 spot	$26.50 to 27.00
English soft No. 1 to arrive Nov.-Dec.	24.00 to 24.50
Southern soft, No. 2	25.70 to 26.20

Coke.—The coke market is following the lead of pig iron and is showing strength represented in increased orders, not sufficient yet in volume to affect prices. English and German syndicate coke, $10.50, local foundry coke from Fairfax and Wilkison, $6.50 per net ton.

Old Material.—Demand for foundry scrap is reported better. The market for old wrought iron, however, is absolutely lifeless, rolling mill and other interests being out of the market at present. We quote in gross tons:

Foundry and machinery scrap	$10.00 to 11.00
Cast stove plate	10.00
Railroad wrought	17.00
Old iron rails	8.00 to 9.50

BIRMINGHAM, ALA.

No Change in Pig Iron Expected Until After the Election.

Sept. 28.

The southern metal market is a little quiet, but the quotations are firm and the indications for an early resumption of normal conditions are bright. There is a little inquiry being received for iron to be delivered during the latter part of the year or the first of the coming year. The manufacturers, however, do not look for any appreciable improvement in the general buying movement until after the election period, the first part of November. The fact that several of the iron companies in this district are pretty well satisfied with conditions, having their probable make for the remainder of the year nicely covered, gives much strength to the general conditions.

The Sloss-Sheffield Steel & Iron Co. is making iron again at the Lady Ensley furnace at Sheffield, the furnace acting nicely right from the start. It will not be long before the Philadelphia furnace at Florence, belonging to the same company, will be in operation. This company is in need of iron to meet contracts during the rest of the year. Improvements being made around two furnaces at Bessemer, 12 miles from Birmingham, and belonging to the Tennessee Coal, Iron & Railroad Co., are being rushed and it is believed that the torch can be applied by Oct. 15. This company does not appear to have any accumulated stock and the shipments are equal to the production.

Reports from Ensley are that the output at the big steel plant for this month will excell any that has been seen since the plant has been erected. The rolling mills of the Tennessee company, located at Bessemer, are still idle, the cause assigned being lack of steel.

BRITISH IRON MARKET.

Continued Improvement in Pig Iron and Finished Lines.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Sept. 19.

The steady upward movement in the iron trade continues, but is much more apparent in the pig iron department than elsewhere. In the Cleveland district, business has had a slight setback, resulting in a fall of about a shilling during the week so that yesterday's quotation was 51s 5d ($12.88). But this represents a slight recovery from the minimum of a day or two ago, and it seems the temporary check has now done its worst. It was due largely to disquieting rumors of failure to renew the German pig iron combination. Stocks have increased during the month, 7,229 tons, but the total is still small, being only 69,433 tons. As usual the Midland market has shown its contempt of the north by going on its own way. Substantial contracts have been arranged, so that practically all smelters in Staffordshire, Northamptonshire, and Derbyshire have orders well into the new year. Prices are creeping up, Northamptonshire being 46s 6d ($11.38), and Derbyshire 48s ($11.74) to 49 shillings ($12). The hematite trade continues good with fair sales at 57 shillings ($13.92), for mixed numbers.

Finished Material.—The finished iron trade shows improvement in all branches, small buyers in particular having benefited by the slight revival in ship building, which has brought orders for chains, and nuts and bolts. But there are complaints that specifications for some bar mills are not coming in as well as they ought, which shows that a proportion of the buying has been speculative. The makers of finished iron are finding their profits further pinched by dearer raw material, for which they cannot get their return in selling prices. Several makers and merchants in the Black country have lately had to call their creditors together.

The steel trade is looking better through more rail orders and structural work. The Scotch makers have during the past fortnight put on two advances of 5 shillings each. But a meeting of English makers at Derby decided not to follow the example, which may prove somewhat disconcerting to the Scotch houses. The Associated Makers of galvanized sheets decided at their meeting at London on Wednesday to maintain the existing price of £12 10.

Busy Motor Car Co.—Two departments of the Cadillac Motor Car Co., Detroit, have been started on night shift, and the whole plant will soon be running a night shift with 1,600 men employed. The concern now has so many orders that the doubling of its capacity will hardly be adequate. The company is now making the start in increasing its capacity to 10,000 machines a year and expects to have accomplished this within the next 12 months.

METAL MARKET

CHICAGO.

Sept. 29.

Shipments of copper on contracts placed in August are going forward in good volume, and in addition an improved buying by railroads and general consumers is noted. The needs of buyers have increased which fact rather than inclination is responsible for the heavier purchases.

Lake copper, carload lots, 14c to 14½c; casting, carload lots, 13¾c to 14c; pig tin, 32c to 32½c; spelter, 4.85c to 5c; pig lead, desilverized, 4.60c to 4.85c in 50-ton lots; corroding, 4.85c to 4.95c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list f. o. b. LaSalle in car lots of 600 pound flasks; Cookson's antimony, 10c to 10½c; other grades, 10c.

There is little to report with regard to old metals, and changes in prices have been immaterial. We quote to dealers as follows:

Copper wire, 11½c; heavy copper, 11½c; light copper, 10½c; heavy red brass, 10½c; heavy yellow brass, 8½c; light brass, 6½c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7½c; brass clippings, 8¼c; tea lead, 3¾c; lead scrap, 4c; zinc, 3.10c; tin pipe, 25c; tin foil, 23c; pewter, 17c; electrotype plates, free from wood, 4c; electrotype dross, 2¾c; stereotype plates, 4¼c; stereoype dross, 3c; prime slab zinc dross $55 per ton.

ST. LOUIS.

Sept. 29.

Lead and Zinc.—The best price paid for zinc ore in Joplin last week was $38.50 a ton, with a prevailing price of $38. Lead ore suffered a slump, selling at $54, the highest price, as against $56 the preceding week.

Offerings for zinc ore were strong and buyers became active during the early part of the week, but there was a disposition among producers to hold their output for better prices. A majority, however, decided to sell when they discovered that purchasers would not raise quotations. The highest price quoted was $41 on an assay base price of $38.

Several cars of zinc from Webb City during the past several weeks have brought $38.50 as an assay base price. The prevailing price of lead in Webb City for the same period has been $56 a ton on the car. But during the latter part of last week the price slumped to $55 a ton. Quite a number of plants that have been closed for several months have resumed operations, and in fact signs of activity are manifest throughout the Kansas-Missouri district.

STRUCTURAL CONTRACTS.

(Special Telegram.)

New York, Sept. 30.—The Oliver building, Pittsburg, calling for 12,000 tons of steel, will, it is officially announced, be erected by the American Bridge Co.

A number of minor contracts for new buildings have been awarded. The receivers of Milliken Bros. will probably get the contract for erecting the Emigrant Savings Bank building, 5,000 tons, which will be awarded this week.

INSPECTED THE BIG ENGINE.

In response to invitations, hundreds of engineers, technical students and interested citizens visited the plant of Mackintosh, Hemphill & Co., Pittsburg, Sept. 26, and inspected the gigantic twin-tandem compound steam engine just completed by that company for installation in the Duquesne works of the Carnegie Steel Co. About 1,100 invitations had been issued by the company and the list of guests included the Engineers' Society of Western Pennsylvania, the German Engineers' Society, Carnegie Technical Schools, the Pittsburg board of trade and chamber of commerce.

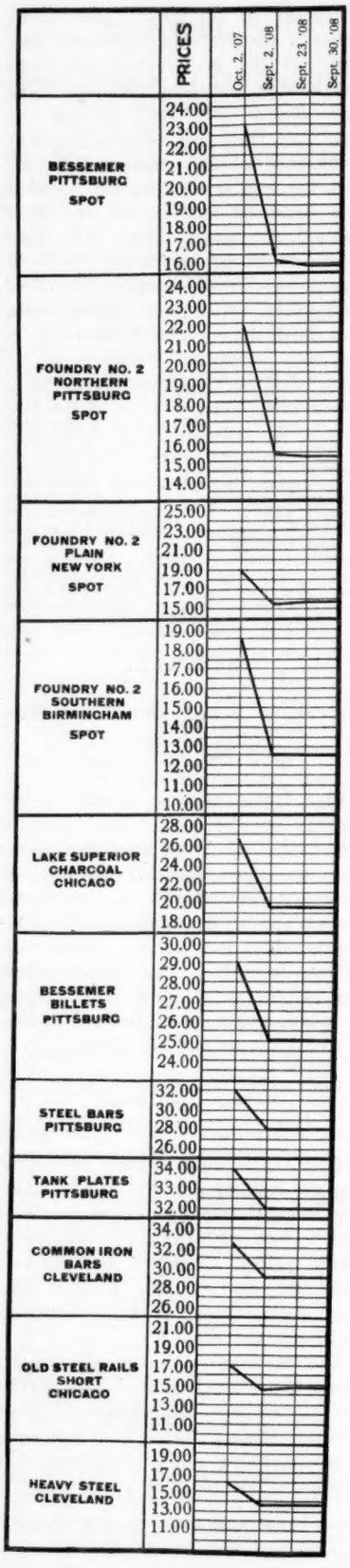
W. D. Sayle has been appointed receiver of the Cowing Engineering Co., Cleveland, builder of the Cleveland, O., Hippodrome. The company operating the Hippodrome is not involved in the proceedings. It has not been determined whether to continue the receivership for some time or reorganize the Cowing company.

The New Jersey courts have ordered the receivers of the Pope Mfg. Co. to make application in the various jurisdictions in which assets of the company are located for the transfer of sufficient funds to enable them to pay a third dividend of 25 per cent on all approved claims, which dividends the receivers are directed to pay.

The Algoma plant of the Lake Superior Corporation, which resumed operating Sept. 15, has on hand orders for steel rails aggregating about 30,000 tons, to which amount it expects to add in the near future and so continue operations.

It is announced that the mills of the Potts Bros. Iron Co., Pottstown, Pa., will resume operations next week.

PRICE CHART.



ANNUAL REPORT OF WESTINGHOUSE AIR BRAKE CO.

The Westinghouse Air Brake Co. has issued its annual report for the year ending July 31, 1908, in which the income account compares as follows:

	1908.	1907.
Net sales	$5,308,016	$11,230,409
Expenses	3,293,260	6,985,337
Net	$2,014,756	$ 4,245,072
Charged off	43,960	393,243
Surplus	*$1,970,796	$ 3,851,839
Cash dividends	1,787,110	2,475,000
Surplus	$ 183,686	$ 1,376,839
Prev. surp.	7,477,987	6,101,148
Total surp.	$7,661,673	$ 7,477,987
Stk. div. 25 per cent	2,750,000	.....
P. & L. surp.	$4,911,673	$ 7,477,987

*Equal to 14 per cent earned on the $14,000,000 capital stock.

The report calls especial attention to the results of the recent business depression, which it calls the "most severe in its history":

Fortunately, orders carried over from the previous fiscal year, together with those booked between Aug. 1 and Nov. 1, 1907, were sufficient to bring the aggregate sales up to a total of $5,308,015.56, as compared with $11,230,409.65 for the year ending July 31, 1907. As will be noted by reference to the accompanying financial statement, net earnings from all sources were reduced in about the same proportion, resulting in a total credit of $2,014,756.57, against which the board of directors subsequently authorized depreciation charges of $43,960.10. For the two previous fiscal years, these charges aggregated nearly $800,000, so that, as heretofore, the annual average is high.

The annual inventory showed a net loss approximating $50,000, due to the sudden decline in the market value of almost all kinds of material in stock. This amount has therefore been charged against the fund previously provided for inventory adjustment. On the other hand, its abundant cash resources have enabled the company to take advantage of the low prices now prevailing by heavy purchases made in anticipation of an early renewal of activity, which accounts for the increase in factory stores from $2,533,473.72 last year to $3,148,617.94 this year.

Modern Stack Completed.—The new stack of the Brier Hill Iron & Coal Co., Youngstown, O., was lighted Sept. 23 and plans provide for its blowing Bessemer. This plant, which is practically new in all its details, embodies the most thoroughly modern ideas in blast furnace construction and is a mechanically filled stack. It is 21 x 85 feet in dimensions with four stoves each 19½ x 85 feet and has an annual capacity of 140,000 tons. The blowing engine, which was built by the Wm. Tod Co., Youngstown, represents a high type of this class of equipment.

Opening Ore Mines.—The Woodward Iron Co. has resumed development work of its brown ore mines at Woodstock, Ala., which was interrupted by the outbreak of the recent coal miners' strike. Three local contractors have just been awarded the contracts for the work which, it is estimated, will cost approximately $100,000. It includes the construction of a large railroad trestle, tipple and ore washer with concrete foundations together with timber and earth dam. Further contracts awarded were for the construction of a total of five miles of additional railroad track.

WILL ENLARGE PLANT.

At a special meeting of the stockholders of the Colonial Steel Co. held at Pittsburg, Sept. 28, it was decided to increase the capital stock of the corporation from $1,250,000 to $2,000,000. The new issure will be of 7 per cent preferred stock, and the funds will be used to materially enlarge the company's plant at Colona, Pa. The company recently discovered a process for producing a "composite metal," which results from the welding of copper or brass in any thickness of steel. Great success has followed the introduction of this product and it is now proposed to manufacture steel sheets of ordinary thickness and weld to them thin sheets of copper, thus giving the stability of steel to the sheet and at the same time, practically the same wearing or noncorrosive features of copper. The increase of capital will be largely devoted to extending the company's operations along this line. At the meeting, the board of directors was enlarged by the election of J. B. Finley, and A. S. Beymer. The other members of the board chosen were J. W. Brown, George A. Howe, W. R. Nimick, T. H. Childs and C. M. Brown.

AN OFFICIAL DENIAL.

The Wisconsin Steel Co. has officially denied that there is any truth in the report that it is to build a $1,000,000 wire plant at South Chicago. The building operations which have given rise to this report apparently, have to do with an additional department contemplated for some time and of which mention has been previously made in these columns.

PERSONAL.

H. T. Gilbert, of the Sharon Steel Hoop Co., is to take charge of the company's offices at Chicago, Oct. 1.

John R. Scott, sales agent of the Carnegie Steel Co. in Cleveland, has returned from a trip to England and France.

F. M. Eaton, resident partner in Cincinnati of Hickman, Williams & Co., leaves this week on a western hunting trip.

Percy B. Lamoreaux, of the Beaver Dam Malleable Iron Works, of Beaver Dam, with his wife, has returned from a two months' trip abroad.

D. B. Meachem, of Rogers, Brown & Co., has returned from a trip to Europe, and is resuming his duties as the head of the Cincinnati office of that company.

E. A. McCormick, formerly assistant treasurer of the Railway Steel Springs Co., has been elected treasurer, that office having been unfilled for some time.

Hollinshead W. Taylor, of the old tinplate house of N. & G. Taylor Co., Philadelphia, has returned from a sojourn with his family at Dinard, on the coast of France. He was a passenger on the steamship Grosser Kurfurst.

Thomas H. Allen has been appointed general manager of the foundry and machine departments of the Livermore Foundry & Machine Co., Memphis, Tenn. Mr. Allen was formerly with the Allis-Chalmers Co., of Milwaukee.

Richard Fitzgerald, of Wheatland, Pa., on Oct. 1 succeeded Thomas Williams, of Youngstown, O., as vice president of the puddlers' division of the Amalgamated Association of Iron, Steel & Tin Workers. Mr. Fitzgerald was elected at the Youngstown convention to fill the office upon the expiration of Mr. Williams' term.

Herbert Marsh, assistant superintendent of the Brown-Bonnell mills of the Republic Iron & Steel Co., at Youngstown, O., has resigned, and is succeeded by Charles Beach, who had been connected with the shipping department of the Mahoning Valley works for several years.

OBITUARIES.

George Mitchell Furness, one of the oldest steam pump manufacturers of Chicago, died at his home there several days ago, aged 66 years. Soon after his arrival in Chicago, 40 years ago, having been born in England, he organized the Furness Bros. Steam Pump Co. with his brother.

John M. Kemmerer, one of the well known iron manufacturers of Scranton, Pa., died Sept. 27, aged 62 years. Mr. Kemmerer was a member of the firm of Bittenbender & Co., of Scranton, and the organizer of the Kemmerer Iron & Steel Co., of that city.

Albert M. Ballard, who died recently in the Catskills, was connected with important inventions in telephony in the last 15 years. He developed electric welding under Elihu Thomson, and was engineer for the Electric Welding Co. In 1896 he went to the Chicago Telephone Co., and since 1900 had been in the employ of the American Bell Co. His best known invention is the "return coin" telephone device now in use.

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THE CONSERVATION OF NATIONAL RESOURCES.

It is to be hoped that at the forthcoming meeting in Washington of the association formed to encourage the conservation of our national resources progress will be made towards the doing of practical work in this connection. The congress which was held a few months ago was noteworthy for the many indiscriminate attacks upon the mere use of many of the resources which nature has given us. There was much of criticism, of a tendency to tear down, and very little of suggestion or of a tendency to build up.

If a mere word in the title of the congress—the word conservation—had been studied, it is doubtful whether some of the speakers would have made some of the statements they did make. There is more than a difference of a syllable in the words conserve and save. To save is merely to keep; to conserve is quite different; indeed, it involves the idea of use, but of use in such a way, and in such conjunction with other things, as to obtain the greatest ultimate good. It is not necessarily conservation of iron ore to change from rail to water transportation, but it is conservation, when using a ton of iron ore, to make it into a piece of steel of the best quality and of the best shape, so that the minimum weight of iron used will render the maximum of service. Nor would it be conservation to quit cutting down trees and quit making coke, but it would be conservation to use a by-product system of coke making and gain a coal tar product, using that product as a wood perservative.

The work of the conservation association should be constructive and not destructive, and it would be quite well if the work were inaugurated with a frank recognition of what is a positive fact, that the great mass of the problems to be worked out are not problems which are new to the world, but are problems which are new to the United States; that there are ready made answers to so many of them that it will pay better to bend the energy to securing the adoption of solutions which have already been adopted abroad than to endeavor to develop new solutions. In the course of time we shall doubtless find problems for which we must furnish the solution ourselves, but for some years to come it will probably be better for us to follow as rapidly as possible the examples which have been set by older countries.

In the matter of forestry, for instance, our government service frankly disclaims seeing any occasion for pioneer work. It realizes that the problems have already been worked out abroad, and the work it has set for itself is the intelligent adaptation of the formulated rules to our own particular conditions. Its intelligence and energy are, therefore, being devoted to the work of selecting the particular means by which the greatest good can be accomplished in the shortest time. As mentioned recently in this department, our forests cover from eight to twelve times as large an area, per capita of population, as do the German forests, although the latter furnish five-sixths of the German consumption, while our government reserves alone, per capita, are about three times the total of the German forests. Doubtless our consumption per capita is larger than is the German consumption, and our waste is much larger, but those are separate problems.

A British iron master now touring this country mentions as one of his surprises on observing our ways that our railroad ties are not creosoted. The omission of artificial preservative measures might not properly be regarded as striking if, through the abundance of wood in the United States, good roadbeds could be maintained without such means, but this observer insists that such is not the case, and that the condition of ties on our leading railroads would not be tolerated in Great Britain.

In our methods of steel consumption, we are clearly wasteful, but an effort to stop a leak is not best made by reducing the pressure, but by stopping the leak. The use of better steel and better forms of steel for given purposes should be encouraged whereby the end may be accomplished as well by the use of less weight. It is easy to observe that in many uses of steel, practice has not changed from the time when the price of steel was "three pounds for two cents," whereas the occasion for change has arisen when the base price has advanced without a similar advance in the extra cost of better quality.

All tendencies towards true conservation, the best use of the good things nature has given us, not the miserly saving of them, should come from the general public, from the great mass of consumers. By a campaign of education much good can often be accomplished. This is being exemplified in the case of concrete. An extensive advertising campaign is in progress as to the use of concrete. It is true the literature comes from a few large cement producers, but the real force comes from the public tendency to use concrete encouraged by this literature. The national conservation body can do much by publicity. Doubtless the farmers were not much

impressed by the figures mentioned at the last conservation congress, of millions of tons of fertile soil carried annually into the Gulf of Mexico, but if they were given literature showing how each could keep his own fertile soil in his possession, all would doubtless be disposed to do something.

BETHLEHEM SECTIONS IN NEW YORK BUILDINGS.

The extent to which the new Bethlehem beam and column sections are finding favor is indicated by their use in the following contracts recently filled in the New York City district by the Hinkle Iron Co., 534 West Fifty-sixth street:

Garage building, for the New York Taxicab Co., Fifty-seventh street near Twelfth avenue; 140 feet by 225 feet; F. M. Andrews Co., architects; total, 1,400 tons; Bethlehem 30-inch I-beams, 600 tons.

Store and loft building for Robt. S. Finney, 149-151 West Thirty-sixth street; 40 feet by 100 feet; Messrs. Mulliken & Moeller, architects; total, 375 tons; Bethlehem sections throughout; 225 tons beams, 150 tons columns.

Store and loft building for E. E. & Terry Hinkle, 38-44 West Twenty-sixth street; 60 feet by 100 feet; The Hinkle Iron Co., architects; total, 650 tons; Bethlehem sections throughout; 450 tons beams, 200 tons columns.

West Twenty-sixth Street Corporation's building, 37-43 West Twenty-sixth street; 100 feet by 100 feet; Neville & Bagge, architects; total, 1,200 tons; Bethlehem beams, 425 tons.

Factory building, 39-43 Essex street, Jersey City, N. J.; 75 feet 8 inches by 96 feet 11 inches; Hill & Stout, architects; total, 200 tons; Bethlehem beams, 125 tons.

Factory building, Forty-third street and Eleventh avenue; 125 feet by 50 feet 5 inches; Thos. W. Lamb, architect; total, 125 tons; Bethlehem beams, 75 tons.

Apartment house for Isaac Mayer & Son, 113th street and Broadway; 100 feet by 100 feet; Neville & Bagge, architects; total, 425 tons; Bethlehem beams, 325 tons.

In the following contracts recently closed, the intention is to use the Bethlehem sections:

Store and loft building for Domestic Realty Co., 121-125 West Seventeenth street; 91 feet 8 inches by 92 feet; Ditmars & Brite, architects; 400 tons.

Alteration to Saranac Hotel, 1457-1463 Broadway; Pittsburg Building Co.; 225 tons; H. C. Pelton, architect.

Dormitory for Williams College, Williamstown, Mass.; 100 tons; Robertson & Oakman, architects.

Lady Ensley stack of the Sloss-Sheffield Steel & Iron Co., at Sheffield, Ala., was fired Sept. 23 after being out of blast for four months. The company is preparing to blow in the stack at Florence, Ala., thus leaving but one of the seven stacks idle.

The stacks of the Roane Iron Co., at Rockwood, Tenn., and of the Citico Furnace Co., were blown in last week.

MUCH CAR REPAIRING

Ordered by New York Central Lines at Two Indiana Plants.

Indianapolis, Ind., Sept. 28.—The secretary of state last week granted permission to the American Coke & Gas Co., of Jersey City and the United Coke & Gas Co., of West Virginia to do business in Indiana, W. S. Dunshee being named as the Indiana rerpesentative of both companies. The United Coke & Gas Co. has contracts for the by-product ovens, the main condenser house and the power plant of the new Citizens Gas Co. in this city, while the American Coke & Gas Co. will also aid in the construction of the plant.

With 300 employes, the Ames Shovel & Tool Co. resumed operating at Elwood last Tuesday, after working part time for some weeks. Bulletins have been posted throughout the plant to the effect that the plant will run continuously during the fall and winter. It is said that the company has a large number of orders on hand.

The American Sheet & Tin Plate Co. has established its Indiana office in the State Life building in this city with R. W. McBride in charge as the Indiana legal representative of the company. Notice to this effect was given the secretary of state last week.

An order to rebuild 2,500 freight cars was given to the American Car & Foundry Co. by the Big Four railroad last week. It is understood that this order is to be almost equally divided between the Indianapolis and Terre Haute plants of the company. The Terre Haute branch has been practically idle all year and preparations are being made to put about 1,000 men to work.

INTERNATIONAL CO-OPERATION FAVORED.

The Reform Club of Sheffield, England, on the evening of Sept. 17, paid a notable tribute to Sir Robert Hadfield, to whom a complimentary dinner was tendered in honor of the knighthood recently bestowed upon him. Many distinguished Englishmen were present, and the speeches were highly complimentary.

In concluding, Sir Robert referred to a speech made in London recently by Judge Gary, who spoke on behalf of a corporation representing $200,000,000 of capital. Why not bring about international understandings? They had local understandings; why not something wider? During last year's crisis in America, the Americans did not "dump" their manufactures in England. He hoped that that was the beginning of a new era of understanding. It was quite possible that in the near future they might get over the terrible bugbear of imagining that when trade was bad in a country that country would begin dumping in another country. If a better understanding was reached in such matters, they would be able to avoid those constant troubles with labor, which were usually brought about by reduction of wages.

PACIFIC FOUNDRYMEN MEET WITH FOREMEN.

A meeting of the Oregon members of the United Metal Trades of the Pacific Coast was held at Portland, Ore., Sept. 18, at the local office of the association, 619 Worcester Bldg. Plans for the meeting of Oct. 22 at which time the foundry and machine shop foremen of Oregon will meet with and be entertained by the United Metal Trades were discussed in detail. At the October meeting, the work of the Associated Foundry Foremen in the east will be outlined, and topics of interest to local men including a discussion of trade schools and industrial education will be presented. A dinner will also be given in honor of the foremen. This will be the first general meeting of record on this coast between employers and foremen, and marks a great step in advance in the organization and *esprit de corps* of the iron and machinery industries of the far west. A committee was also appointed by the Metal Trades, Mr. Morrow of the Phoenix Iron Works, Portland, being chairman, to confer with the Portland School Board regarding the establishment of a night trade school that will include courses in foundry and machine shop practice.

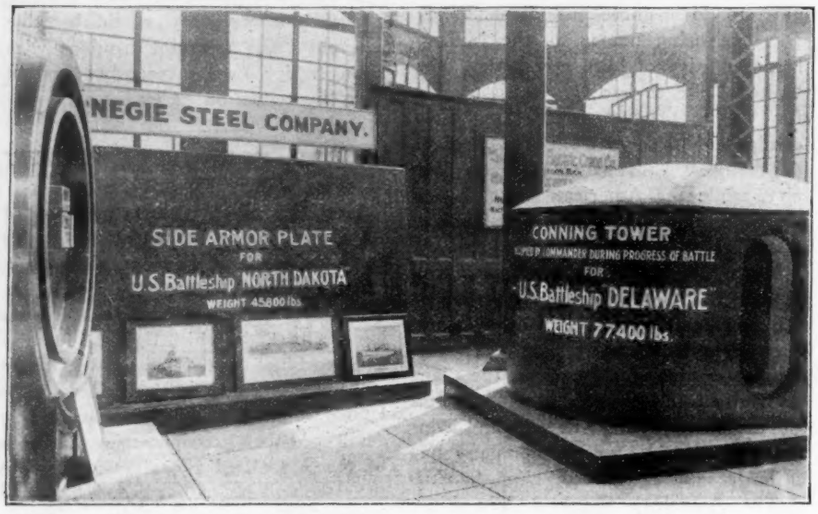
The Western Trunk Line freight committee last week, while considering a readjustment of rates on structural material from Pittsburg to the west, decided that since rates on raw material from Pittsburg to St. Paul are so low that it can be manufactured at the latter city and shipped to Omoha at the same rate as the raw material can be transported from Pittsburg to Omaha at the through rates, nothing can be done advantageously at this time.

Announcement is made that No. 2 stack at Ensley, Ala., of the Tennessee Coal, Iron & Railroad Co., will be blown in Oct. 1. When this is done the company will have five stacks blowing and No. 3 is expected to be fired Dec. 1.

INTERESTING EXHIBITS

Made by Iron, Steel and Machinery Manufacturers of Pittsburg.

Considerable interest is being manifested by iron and steel and machinery manufacturers in the annual Pittsburg exposition which is now in progress at Exposition Hall, Pittsburg. Numerous carefully arranged displays of their products are being made by the manufacturers in the machinery department of the exposition, and these are attracting much attention from the thousands of visitors that daily throng the building. The exposition will continue through Oct. 24.

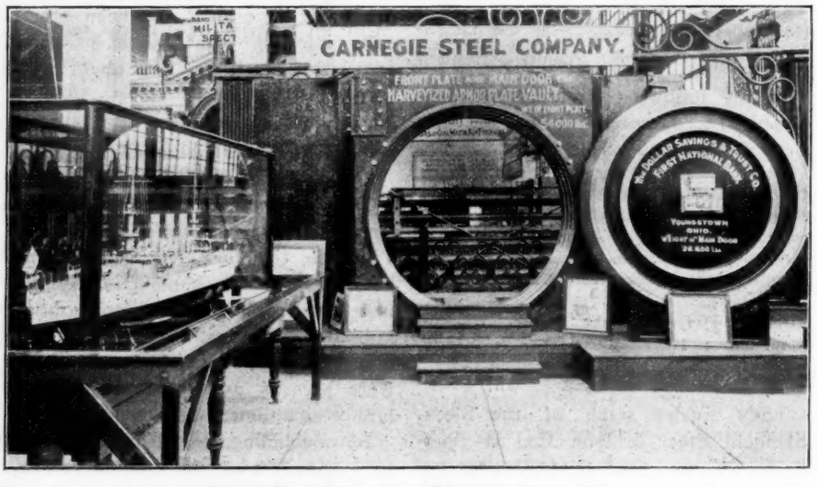


ARMOR PLATE DISPLAY, CARNEGIE STEEL CO.

An interesting feature of the displays is a representation of the great commerce of the Monongahela river. The steamer Sprague plying on the Mississippi river is shown in miniature taking a tow of 56 coal boats and six fuel barges. This was an actual shipment made, and comprised 1,400,000 bushels of coal, sufficient to fill 1,178 railroad cars. Miniature barges loaded with steel rails, and cotton ties by the Carnegie Steel Co., with nails, wire, woven wire fence, wire rope, and horseshoes by the American Steel & Wire Co., and with the Pittsburg Perfect electrically-welded fencing, barbed wire, smooth wire, and wire nails by the Pittsburg Steel Co., are shown as demonstrating the manner of shipment by water from Pittsburg to the south.

Armor Plate Display.

The Carnegie Steel Co. has on display a separate exhibit of armor plate products. A test plate of the armor used on the battleships Delaware and North Dakota, illustrating its resistance to the projectile fired into it in the testing process, attracts attention. A section of the side armor plate of the battleship North Dakota weighing 458,000 pounds, and the conning tower of the battleship Delaware, weighing 77,400 pounds, are shown. An exhibit is made of the Harveyized armor plate vault built by the Carnegie company for the Dollar Savings & Trust Co., Youngstown, O. The weight of the front plate is 54,000 pounds and of the main door 26,600 pounds. A complete model of Admiral Evans' flagship, the Connecticut, a considerable portion of the material of which was furnished by the Carnegie Co., completes the exhibit.



ARMOR PLATE DISPLAY, CARNEGIE STEEL CO.

The Westinghouse companies have one of the largest industrial displays. The greater portion of this is by the Westinghouse Electric & Mfg. Co., and is a striking exemplification of the many practical uses to which the electric current as motive power is now being put, ranging from the smallest motors for simple household service to those for heavy mill duty. The Westinghouse Machine Co. exhibits an auto shop truck and the Westinghouse Air Brake Co. a number of air compressors in operation, as well as a complete mechanism for demonstrating well pumping by compressed air.

Taylor & Dean, Pittsburg, manufacturers of ornamental iron and wire work, have a large exhibit of their fencing, cresting, fenders, fire guards, wire doors and window screens, brass and iron wire cloth, artistic iron and brass grill work, automatic fire extinguishers and expanded metal lockers.

The Pittsburg Machine Tool Co., North Side, Pittsburg, has one of its Curtis rotary pumps in operation. This company manufactures pumps of from 70 to 2,000 gallons per minute capacity.

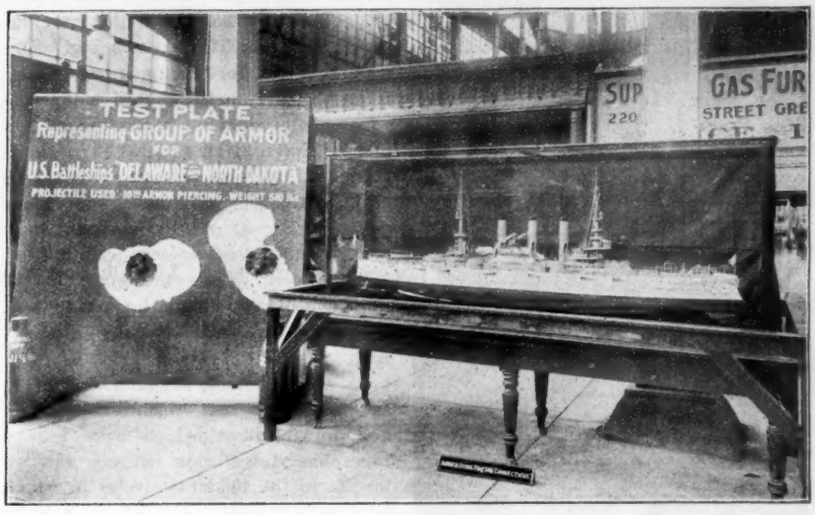
The Reinforced Brazing & Machine Co., Pittsburg, shows specimens of its welding and brazing process for broken castings, as well as the brazing tools used in these operations.

The Morris Chain Co., Ithaca, N. Y., has running gears attached by its rocker joint chain, as well as numerous photographs of notable installations.

Wave Motor Exhibited.

From a mechanical standpoint one of the most interesting exhibits is that of the Snee wave motor or turbine. This machine is designed to generate power from the undulating motion of ocean waves, and a small motor of this type is shown in opera-

tion in a tank of water which is constantly agitated similarly to the movement of waves. The motor is the invention of John A. Snee, Pittsburg, and the Snee Universal Wave Motor Co. has been formed to provide for its manufacture. A 61-ton turbine has just been completed at the works of the Wilson-Snyder Mfg. Co., Pittsburg, for installation in the first powr station of the Snee company in the ocean at Atlantic City, N. J. This station, which is now under course of construction, will be equipped with two 61-ton motors. The foundation upon which this mechanism will rest is a solid mass of steel reinforced concrete.



Armor Plate Display, Carnegie Steel Co.

The National Tube Co. displays welded pipe, Shelby seamless steel tubing, valves and fittings. An exhibit is made descriptive of the method of making Shelby seamless steel boiler tubes, starting with the low carbon bloom, the raw material, and ending with the finished product. The display also includes some Shelby seamless steel boiler tube test pieces, pieces of Shelby seamless steel tubing hammered at both ends, as well as various other pieces of this class of tubing. A table made from Shelby tubing is shown. The sides are made of the tubing cut lengthwise; the bottom from large pieces of tubing bent, and the top from hundreds of pieces of various shapes and sizes of this material. Eight men are required to move this table. In valves and fittings, gate valves, the "Kewanee" specialties, including ells and tees, check valves, boiler couplings, and Y valves, assorted sizes of "Kewanee" unions, cast and malleable iron fittings, and a line of valves and cocks are displayed. A number of pyramids show different sizes of welded pipe from ⅛ to 30 inches. These include samples of merchant, extra strong line pipe, Matheson joint pipe, drive pipe, tubing, double extra strong pipe, casing and boiler tubes.

The Union Electric Co., Pittsburg, has on exhibition electric cooking utensils and other of its electric appliances.

LABOR NOTES.

Employes of the Susquehanna Iron Co., Lancaster, Pa., have resumed work at a wage decrease—50 cents a ton on boiling and 10 per cent in finishers' wages.

After a strike of 16 months' duration, machinists who walked out of the shops of the Louisville & Nashville railroad because of alleged discrimination in favor of non-union machinists, has been declared off, the strikers to return to work Oct. 1. President O'Connell, of the men's organization, says the failure of the strike is due primarily to industrial conditions.

Molders to the number of about 100 employed by the Weatherly Foundry & Machine Co., Weatherly, Pa., struck recently and discommoded the shops somewhat, alleging they had been asked to work overtime.

President Gompers in testifying in the contempt proceedings as to violation of the injunction of the Bucks Stove & Range Co., declares that interests in the Manufacturers' Association endeavored to persuade him to desert the cause of labor. The head of the Manufacturers' Association in denying this statement says: "He seems to be trying to make a cheap martyr of himself." The taking of testimony in this case is not yet concluded.

Striking machinists of the Canadian Pacific railroad have decided to memorialize the Dominion government with a view to seeking a settlement. A few days ago 125 British machinists were landed at Montreal and began work at the Angus shops. Two hundred and fifty others are said to be on their way from England. The company declares that since the strike began seven weeks ago 3,500 mechanics have been employed, of whom 600 are strikers.

Dutcher Co. Organized.—The Dutcher Steel Castings Co., Milwaukee, has been organized to succeed the firm of J. A. & P. E. Dutcher, which passed into the hands of a receiver a few months ago. The capital stock is $125,000. The officers of the company are William Goodrich, president; G. A. Goodrich, vice president, and sales manager, and John H. Hetherington, secretary, treasurer and general superintendent. Mr. Hetherington has been with the firm over 10 years, and is, therefore, thoroughly familiar with all the details of the business and its management. No additions or improvement to the plant are contemplated in the near future, new annealing furnaces, industrial tracks and an electric welding outfit having recently been installed.

Duty on Window Frames.—The board of United States general appraisers has rendered a decision holding that steel window frames or casements shall be assessed 45 per cent ad valorem under the provisions of paragraph 193 of the Dingley law. The board states that it is manifest that window frames should not be included in structural shapes.

Adding 10 Mills.—The Berger Mfg. Co., Canton, O., has announced that it will build 10 new hot mills, thus giving it a total of 21 hot mills at its plant. The additional buildings which the enlargement of the plant will necessitate will be built by the Pittsburg Bridge & Iron Co., and include three new structures, 140 x 350 feet, 60 x 80 feet, and 40 x 70 feet.

The rail mill of the Maryland Steel Co. at Sparrow's Point has closed down after two months' continuous operating.

THE DEATH OF HENRY E. PRIDMORE.

The death of Henry E. Pridmore, of Chicago, one of the best known men in the foundry trade, was announced in a cablegram, the end having come Sept. 24 or 25, in Glasgow, Scotland, where Mr. Pridmore had arrived a few days previously. No details as to the death have been received. Mr. Pridmore had not been in good health for several years.

Mr. Pridmore was an inventor of no mean order, and his achievements in the manufacture of harvesting machinery, and for the last 22 years in molding machinery, place him in the front rank of those who have given their time and study to the development of these problems. His was an intensely practical mind, as is well exemplified by the long list of patents to his credit. In fact, it had been long said of him by his associates, competitors and customers that he was able to grasp an engineering construction problem or a mechanical idea more quickly than was possible by most other men.

Mr. Pridmore was born in Brockport, N. Y., Sept. 21, 1854. He served his time as a machinist in that city. He moved to Rochester, N. Y., and was employed by a firm manufacturing governors. From there he went to Palmyra, N. Y., where he worked for a firm manufacturing printing presses. Later he moved to Albany, where he began his first connection with an agricultural implement shop which was to have such a marked effect on his career. He left Albany and returned to Brockport where he entered the employ of the Johnston Harvester Co., which is now located at Batavia, N. Y. He remained here two or three years, and then moved to Springfield, O., to enter the employ of the Warder, Bushnell & Glessner Co., now the Champion division of the International Harvester Co. He went to Chicago in 1879, and began to work for the McCormick Harvesting Machinery Co., remaining continuously with it until he started in business for himself in 1892. The year in which he invented his first molding machine was 1886. At that time, he held the title with the McCormick people of superintendent of experiments. The machines were used successfully in the McCormick foundries. Mr. Pridmore started in business with just a drafting room on Wabash avenue, and had his machines built in jobbing machine shops. Later he moved to 111 Harrison street, a manufacturing building, where he occupied two floors. He moved into the present plant at Nineteenth and Rockwell streets in May, 1899.

Mr. Pridmore was the man who first made the stripping plate molding machine a commercial success. This machine is made in 13 different designs. Other molding machines he has invented include the rockover drop machines and plain rockover machine. The last machine designed by Mr. Pridmore, and which was built and shipped just before he left Chicago, was a special stove plate rockover.

In harvesting machinery, the following inventions are to his credit: A steel self-binding harvester, a front cut mower, a vertical cone harvester, a sweep rake reaper, a binder, a knotter, and many other patents in combination with others. Several of his harvesting machine inventions were exhibited at the Pan-American exhibition in the agricultural machinery department. All bore his name as inventor.

HENRY E. PRIDMORE.

Pridmore's first trip to Europe was in 1900 to attend the Paris exposition. At the branch of this exposition at Versailles, his molding machines were exhibited by the International Harvester Co. in conjunction with their other machinery, and the Pridmore machine was awarded a diploma and gold medal.

Mr. Henoch Retires.—It will come as a distinct surprise to his many acquaintances to know that Louis M. Henoch, secretary of Jos. T. Ryerson & Son, is about to terminate that association. He has disposed of his interests in the company and is arranging for his withdrawal from a service that began in 1888 and which has been to him the major portion of his business life and training. The value of this service to his company is apparent from the record of his advancement, which in recent years has placed him first as general sales manager and later as secretary with general jurisdiction over sales, purchases and operations of the company. A part of the very sincere regret that will be felt within the company at the severing of this relationship will be shared by those whose dealings with Jos. T. Ryerson & Son have been through Mr. Henoch and it is to be hoped that the developments and future plans which have led to this change will not entirely remove him from the business circles in which he has been. Mr. Henoch is holding in abeyance his plans for the future, as he will probably go abroad about the first of the year. Upon his return, definite announcement will be made regarding his connections, which will continue to be in the same field with which he has been familiar.

Repairing Warwick Stack.—No. 2 furnace of the Warwick Iron & Steel Co. was lighted Sept. 24. The company is rebuilding its No. 3 stack, replacing the old shell with a new one.

This is about the only new work connected with No. 3 stack, except the installation of a centrifugal dust catcher, designed and built by F. C. Roberts & Co. The Warwick company advises that based upon present conditions, it has no intention of putting No. 3 furnace in blast this year.

The shops of the Hawley Down Draft Furnace Co. have been purchased by Tillotson & Stout, who will do a general boilermaking and tank business. In addition, they will manufacture the Hawley Down Draft and Schwartz furnaces, the offices for which companies have been opened in the First National Bank building, Chicago.

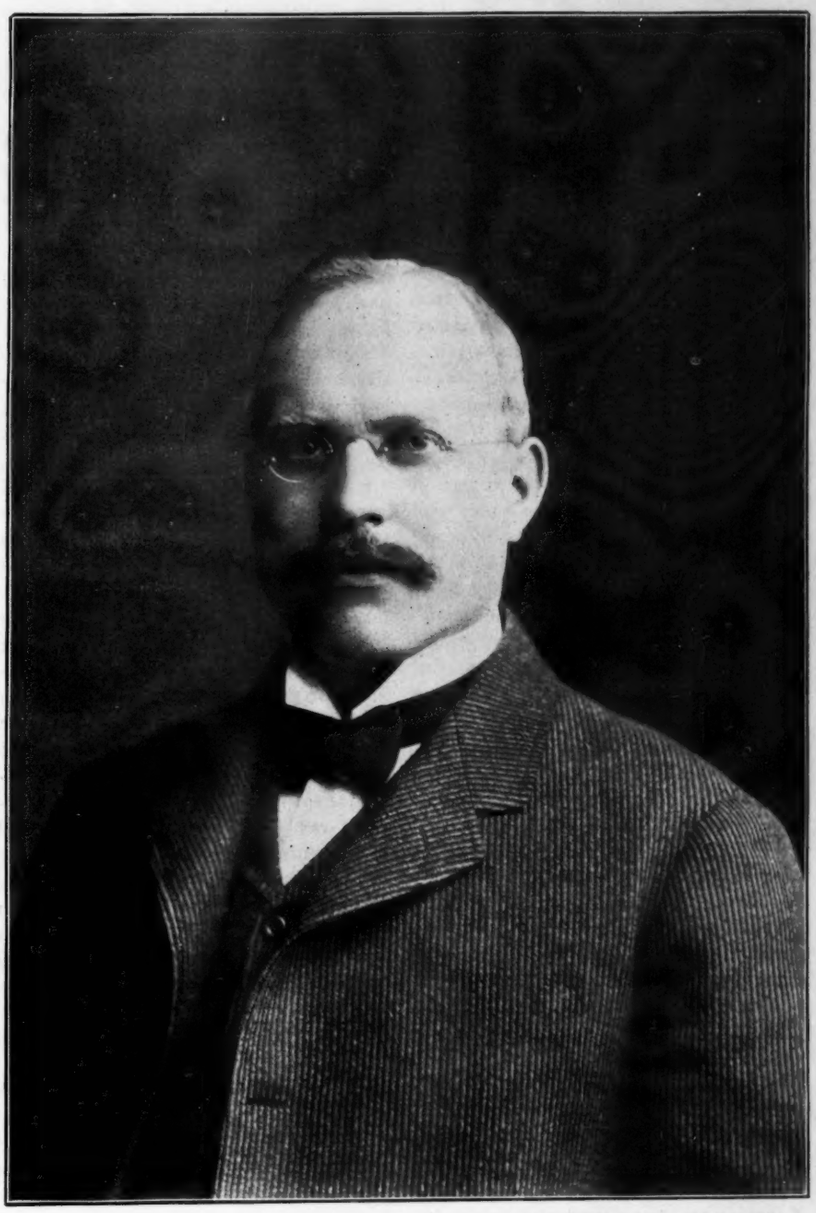
The Lunkenheimer Co., of Cincinnati, which was forced to reduce its force during the panic, resumed operations last week with its full force of 700 men.

W. E. COREY.*

W. E. Corey, president of the United States Steel Corporation and one of the directors of the American Iron and Steel Institute, in the formation of which he has been an active participant, is a native Pennsylvanian. He was born in 1866, of American parentage, one of his ancestors being Benijah Corey, who a hundred years ago owned a tract of about 300 acres in what is now New York City. Mr. Corey's entire business life has been spent in the manufacture of steel, always in connection with the Carnegie interests and the Corporation, and, like other of the Carnegie partners who have reached high places in the industry, he was early selected by the shrewd Scotch steel-maker as fitted for a position of responsibility and importance.

Mr. Corey was 16 years of age when he entered the chemical laboratory of the Edgar Thomson plant. This was at a time when the combined efforts of Mr. Carnegie and Captain Bill Jones were spurring on the works to the breaking of records at a pace which startled the world, and the young chemist was quick to realize the opportunities in the widening future of the industry in America. During the time he was in the laboratory, his evenings were given up to the study of chemistry and bookkeeping, and promotion came rapidly, for at 21 he found himself superintendent of the armor plate department. His invention of the Carnegie reinforced armor was only one of the steps by which he rapidly climbed the ladder to the presidency of the Carnegie Steel Co., the National Steel Co. and the American Steel Hoop Co.

On the resignation of Mr. Schwab in 1903, Mr. Corey was elected to the presidency of the Corporation, which under his administration has enjoyed a steady and rapid development. During the last year its holdings in the Lake Superior district produced over 43 per cent of all the iron ore mined in the United States, its furnaces made about 42 per cent of the country's 26,000,000 tons of pig iron, its steel mills turned out 56.4 per cent of the steel produced in America, and its percentage of rolled products of all kinds averaged close to 50. In the co-operative movement of the past year, as a member of the general committee and as chairman of the sub-committee on iron ore and pig iron, Mr. Corey naturaly played an active part in formulating and carrying out the policies employed to guard the iron and steel industry from the demoralized conditions incident to the many depression periods of its history.



In administering the complicated and numerous duties of his position, Mr. Corey is painstaking, thorough, reserved, a believer in perfect organization. He is early and late at his office, carrying out the bit of advice he once gave to an interviewer: "The man who succeeds is the man with bulldog tenacity—who never gives up. He is the man who does not only what he is told, but more." Mr. Corey is a member of the American Institute of Mining Engineers.

*Tenth of a series of brief biographical sketches of officers and directors of the American Iron and Steel Institute. The others of the series have been: Elbert H. Gary, April 16; Willis L. King, April 23; John A. Topping, May 7; Wm. A. Rogers, May 14; E. A. S. Clarke, May 21; Thos. J. Drummond, June 4; Samuel Mather, July 9; Chas M. Schwab, Aug. 6; J. C. Maben, Aug. 13.

The Canadian government has issued a special report respecting the bounties paid during the year ending March 31, as follows: On steel manufactured in Canada, $1,092,200; on pig iron, $863,816; on iron rods, $347,134; making a total on iron and steel products of $2,303,140.

As a memorial to her father, the late Peter White, Mrs. George Shiras III, of Washington, has announced her intention of presenting a $10,000 pipe organ to St. Paul's Episcopal church of Marquette, Mich.

AMONG MACHINERY MAKERS.

CHICAGO.

Many Inquiries Have Accumulated and Orders Are More Numerous.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Bldg., Sept. 26.

A report, in a measure more gratifying, was obtained from a number of machinery dealers this week with respect to the character of business in September as compared with July and August. Particularly in the last 10 days, it is reported, inquiry and orders have been much more numerous and the prospect of a larger field for business has opened. At the same time there is no attempt to disguise the fact that the improvement is purely relative, is spasmodic to a great extent and evidences, still, a considerable degree of indecision as to just when purchases will be made. There is no doubt existing that users are in need of large quantities of tools and machinery supplies and piles of good live inquiries have accumulated on the desks of selling agencies. So the trade is very hopeful as it awaits the "something," political, financial or otherwise, that will clear up the unsettled frame of mind into which industry has been very generally plunged. The condition of extremely depleted stocks which seems to apply to all classes of material is quite true of machine tools and equipment. Almost every order that is received now requires some work from the factory.

The Chicago, Rock Island & Pacific railroad reports having bought this week a $4,200 bill of woodworking and machine tools. The Chicago, Milwaukee & St. Paul list mentioned a week ago calls for tools aggregating in value nearly $40,000. These tools are for one of the new railroad shops along the line of the Pacific extension, this particular consignment being for Deer Lodge, Idaho.

The Reeves Pulley Co., on South Canal street, has found orders coming in much more frequently in the last two weeks, and among the unusual orders received was one $500 lot of transmission for the Sall Mountain Asbestos Co., at Porter, Ind., an order for 36-inch, three-ply belting amounting to $400, and a number of 6 x 15-inch pillow blocks for the Marseilles, Ill., Land, Water & Power Co.

Marshall & Huschart report that their business in light tools has been picking up, but that there is still so little business to go round that competition is very keen and every order has to be fought for.

The Puster Belting & Pulley Co., Canal and Madison streets, handling transmission machinery and general machinery equipment, has been receiving inquiries from machine shops in increased number during this month, but buying has not been very lively.

Adkins, Young, Allen & Co., 50 South Canal street, carrying a line of pumps and engine supplies, are delivering a large order of pumps valued at $15,000 to the Corn Products Co., consisting of 62 centrifugal pumps and one twin horizontal Burnham steam pump, 22 and 36 x 26 x 24 inches. This latter pump is of unique design and possessed of a peculiar flexibility both as to the number and quantity of liquids pumped. The conditions existing were pointedly illustrated here, on the one hand by a drawerful of inquiries, any one of which was likely to be closed at once, and on the other hand by an order for a pump, just received, upon which quotation was made July 25. This inquiry had been followed up by four letters without bringing results, but the order coming two months later asks for the pump "at once," and the purchaser will probably wonder why it does not come by return mail. Another instance of the low stocks being carried was offered in the case of 200 hose attachments ordered from the largest manufacturer in Chicago, which usually carries from 2,000 to 3,000 in stock. The order was delayed two weeks while the material was being manufactured. In general, this concern finds business of a spotty character but with intervals between orders growing appreciably shorter.

McDowell, Stocker & Co. have sold in the last month the heaviest machinery disposed of from their store this year. Among the recent orders filled for heavy machinery were one for a large steam hammer, one 22-inch lathe, and two 24-inch and a 42-inch Colburn boring mill. Throughout the entire year up to this time sales have been confined almost entirely to the light tools.

The Chicago office of the Cleveland Twist Drill Co. finds a great deal to be cheerful about in the conditions throughout Illinois and Wisconsin and appearances have been supported by the receipt of a number of very good sized orders. Representatives of this office report that, while the manufacturers of machine tools appear to be the last to feel the improvement, the shops of the agricultural implement manufacturers and railroads are very busy. The shops of the Illinois Central road, the Chicago, Burlington & Quincy, the Chicago, Rock Island & Pacific, and the Chicago, Milwaukee & St. Paul are very busy. At Beloit, Wis., the wind mill, gas engine and pump departments of Fairbanks, Morse & Co. are working to capacity. The situation with many machine shops is illustrated, however, by the case of a Beloit machine works where not a single tool has been bought since April last, but where all the odds and ends about the plant have been repaired and dressed up to be pressed into service.

O. L. Packard Machinery Co. reports that since Sept. 1, and especially in the last 10 days, sales have been much more encouraging and it has once again enjoyed the experience, almost forgotten, of at least one sale every day during the period mentioned.

PITTSBURG.

Inquiries More Numerous, but New Business Is Not Heavy.

Office of THE IRON TRADE REVIEW,
510 Park Bldg., Sept. 26.

The general machinery market is moving slowly in the direction of moderate improvement. Inquiries are more plentiful in most lines, but business being actually closed is not heavy. The usual effect upon the market of presidential elections, to defer the closing of pending contracts, is now apparent. The demand for machine tools continues light with trade running largely toward single orders. Structural tools have been more lively the past month along with the greater activity among fabricators. In cranes, which are regarded as barometers of confidence among manufacturers since their installation is usually in connection with new plant construction, there is an encouraging number of propositions before makers.

In power equipment, a good commercial demand for boilers is coming out, largely from public institutions and from business buildings, but the manufacturing demand is not strong. Electrical equipment is fairly active but new mill business is not of great importance. Rolling mill machinery is dull, but at least one live project, the new steel mill to be built by the Up-

son Nut Co. at Cleveland, is attracting tenders for the construction of three open-hearth furnaces, a 34-inch blooming mill and a merchant mill.

The Midland Steel Co., Pittsburg, has closed for a No. 13 Pratt & Whitney milling machine and a special automatic machine for car wheel manufacture, which will be installed in the company's plant at Midland, Pa.

The Carnegie Steel Co. has taken bids for a large piping equipment contract in connection with the erection of the several new blast furnaces at the Ohio works, Youngstown, O.

The Ontario Power Co., Niagara Falls, N. Y., has been negotiating for a new generator, switchboard and other electrical equipment for its power plant. Robert C. Board is secretary and treasurer.

Bids have gone in for the construction of an addition to the company's store, and the furnishing of the equipment for the new power plant of the Joseph Horne Co., Pittsburg. It is expected that a general contract covering the construction of the addition and the power plant will be closed shortly, and that subsequently the machinery contract will be let.

The Pittsburg Water Heater Co., Pittsburg, manufacturer of automatic instantaneous water heaters, announces that after Oct. 1 their new Pittsburg sales office and display room for Pittsburg and adjacent territory including all of Allegheny county, will be located at 428 Penn avenue. The company will have on exhibition and in operation the latest model heaters with a competent demonstrator on hand, who will devote himself to the attention of patrons. The business of the Pittsburg Water Heater Co. in Pittsburg proper and adjacent territory is covered by E. A. Krah, H. O. Dummett, T. R. Boss Jr., John P. Reinecke and C. A. Detweiler.

CINCINNATI.

Better Tone to Market, But Improvement Is Very Slow.

While there is a better tone to the machinery market than prevailed during the summer months and some gain in the amount of business placed, the conditions during the past week show no marked difference as compared with the preceding one and the increase in business is so gradual as not to be perceptible from week to week. Visits to the shops of the manufacturers, however, are convincing to the observer that while operations are not nearly normal, they are more satisfactory and working forces are increasing steadily.

The board of trustees, commissioners of waterworks, of Cincinnati, opened bids Sept. 25 for about $12,000 worth of machine tools. The proposal called for one 36 x 16-inch engine lathe; one 18-inch by 12-inch engine lathe; one 16-inch by 12-inch engine lathe; one 14-inch by 8-foot engine lathe; one 30-inch by 30-inch by 8-inch metal planer; two 16-inch shapers; two 48-inch radial drills; three 20-inch upright drills; one 18-inch upright drill; three 20-inch by 2½-inch wet tool grinders; three emery wheel floor stands. These tools are all to be motor driven. There was considerable competition among the machine tool builders here to secure this order or such part of same as they could fill.

Engine builders report considerable pending business and a number of jobs are being figured upon, but orders are rather slow in being placed. Foundries are running about as they have been with scattering reports of improvement.

The Rahn-Carpenter Co. is building a new boring machine for use in its own shop, but it is likely it will add this machine to its line.

The Cincinnati Lathe & Tool Co. is shipping this week, an order to Sydney, Australia, and another to South America. The company reports conditions much improved and regards the outlook with sufficient confidence to justify the making of some stock, as recent sales have taken enough machines to put the company in comfortable condition.

Greaves, Klusman & Co. report improvement in both their iron and wood working lines. Mr. Klusman has just returned from a vacation trip in Michigan and reports a more encouraged tone to business from his observations in that territory.

Philip Fosdick, of the Cincinnati Chuck Co., and also interested in other machine tool enterprises here, has been nominated for treasurer of Hamilton county on the Republican ticket.

The Cincinnati Machine Tool Co. reports a better tone to the trade and from the amount of inquiry and general indications anticipates steady improvement.

The I. & E. Greenwald Co., builder of engines, regards the present hesitation in order placing as due to the uncertainties surrounding the presidential election. Correspondence indicates a number of installations in anticipation, which are likely to be placed as soon as the effects of election results are more clear.

The Oesterlein Machine Co. has been taking advantage of the dull spell by making improvements in its line of milling machines and grinders.

BOSTON.

Conditions Show Little Improvement —Some Shops Resume.

Boston, Mass., Sept. 29.—The past week has not developed any material change either one way or the other in the machine tool situation in New England. There had been a general feeling among the trade that the month of September would show an encouraging advance in the way of improvement, but on going over the business of the month just drawing to a close there is not much to be found in the way of facts that shows any considerable gain over the summer months. A number of the big plants which closed down during July or August for the annual summer clean-up have resumed operations, but only on a limited scale. They are keeping their best mechanics at work in order to retain their services when the shops will once more be running on full time and over time.

There has been somewhat of an increase in the number of inquiries, but only a small percentage of these inquiries have hatched into actual orders. It is probable, however, that a good percentage of them will develop into orders in the near future. Very few of the big people in the trade express the opinion that the political question has much bearing on the condition of the market in general.

The iron and steel markets are running about on a parallel with the machine tool lines and are of course largely dependent on them.

F. E. Reed, of the F. E. Reed Co., Worcester, Mass., is very slowly recovering from the injuries which he sustained in an automobile accident in the White mountains of New Hampshire several weeks ago, and is able to give but little time and attention to his extensive business interests in Worcester.

L. Thwing, of Hill, Clarke & Co., Boston, was taken to one of the local hospitals a few days ago, suffering from a serious attack of typhoid fever. It will be some time before he will be at his desk again.

Hill, Clarke & Co., Boston, have added another to their already extensive line of machine tools in the new universal horizontal boring ma-

chine manufactured by the Universal Boring Machine Co., of Hudson, Mass.

MILWAUKEE.

Many Additions Being Made by Manufacturing Concerns.

Milwaukee, Wis., Sept. 28.—Milwaukee contractors say that never before have so many manufacturing plants been carrying on work of improvement as at the present time. In many cases, additions are being erected, while in several instances new plants are being built and here and there much new equipment is being added. It is believed that manufacturers realize that never again will building material be at so low a stage as at the present time and general advantage is being taken of this.

Conservative estimates have placed the amount that will be expended by the J. I. Case Threshing Machine Co. at Racine on various improvements at $1,000,000. A modern sprinkling system is being installed and a large storage warehouse is being erected. Work on a huge standpipe and water works systems is well under way and operations have begun on the construction of a tunnel under the Root river which will carry water pipes and electric wires.

Charles J. McIntosh, of Milwaukee, has been appointed assistant secretary of the J. I. Case Threshing Machine Co. at Racine. Mr. McIntosh is the son of Charles L. McIntosh, treasurer of the company, and is a graduate of the Massachusetts Institute of Technology.

A malleable iron works plant will be established at Vesper by a stock company which has been formed for the purpose. The promoters are Assemblyman C. R. Goldsworthy, of Vesper; John W. Hayes, of Superior; H. L. Bartholomew, of Fond du Lac, and Frank Darling, of Wautoma. The company has been capitalized at $20,000.

Several powerful pumps have been shipped recently to the forest fire districts of northern Wisconsin and Minnesota by the Fairbanks-Morse Co., of Beloit. Within two hours of the receipt of the order, a big duplex fire pump was shipped the past week to the Virginia Light & Water Co. at Virginia, Minn.

Operations have been resumed at the foundry of the United States Cast Iron Pipe & Foundry Co. at Superior after a close down of 10 months. Stock on hand has about been exhausted and substantial orders have been received for culvert pipe from many of the western railroads. Usual improvements have been made during the period of idleness and it is expected that the plant will now be kept in steady operation for a year at least.

The plant of the Bucyrus Steam Shovel Co. of Milwaukee has been closed for a short time in order that needed repairs may be made, stock may be inspected and summer business gone over. The capital stock of the company was increased lately from $300,000 to $1,000,000 in order to prepare for largely increased orders and to cover the many improvements that will be made at the plant. Fall operations will be resumed within the next two or three weeks.

PHILADELPHIA.

September Was a Good Month—Some Fair Prospects.

Office of THE IRON TRADE REVIEW,
408 Central Trust Bldg., Sept. 29.

September proved to be the best month since May in the local machinery field. The prospects for the immediate future are considered fairly promising, there being some good business pending, but as a rule buyers are slow to close deals and show a disposition to hold off till after the first of the year. Orders in the machine tool line are mostly for single machines and there is more call for the lighter than the heavier styles. The demand from the railroads is flat, except for parts for renewals. There is some foreign trade being done.

The Link-Belt Co. has on hand the following: For shipment to Cuba, three orders for sugar conveying machinery; for Delaware, one order for soda conveyors; Florida, conveyors for phosphate rock for four different locations; Pennsylvania, conveyor for a fuel testing plant, apron conveyor for a coke plant, car hauling machinery for a coal mine, coal crushers for a coal and coke company, a retail coal pocket, and one large monobar chain conveyor for a coal company; New York, orders for two locomotive coaling stations, one bulk conveyor outfit, retail coal pockets, a conveyor for wood refuse; Ohio, an order for coal pocket equipment; West Virginia, a car haul coal chute, besides several orders not classified.

The H. B. Underwood Co. reports a fair amount of domestic business with some sales of boring machines in Cuba and South America. The company has on hand a stock of nearly all its lines and is prepared to meet demand for immediate shipment.

The Philadelphia Gear Works has just doubled its power plant by the installation of a 100 horsepower throttling tandem suction producer gas engine made by the Du Bois Iron Works of Du Bois, Pa. It finds the demand for gears active, especially in the electric line and generally from the south and west.

The Newton Machine Tool Co. reports September as better than July and August. Orders, however, being mostly for individual machines.

Wednesday, Oct. 7, will be "Industrial day" of "Founders' Week" in Philadelphia and all the concerns in the city will be represented in a monster parade to be given in the afternoon. The entire city will keep open house the week beginning Oct. 4 in commemoration of the 225th anniversary of the founding of the city of Penn.

NEW YORK.

Little Improvement in Machine Tools —Some New Concerns.

Office of THE IRON TRADE REVIEW.
Room 1005, No. 90 West St., Sept. 29.

The general machinery trade manifests little change. Perhaps on an average September bookings will show a slight increase, but the gain is spasmodic and no important lists are contributing to current business. As yet the railroads are not even making purchases of track and rolling stock equipment to any extent and, as replacements of shop equipment are usually considerably later in developing into business, no large orders from these sources are expected for some time. It is known, however, that railroad shops are in imperative need of tools, and the stress of repair work during the rush of the grain moving season may result in some purchasing. One of the largest factors in the railway machine tool field is so confident of the early approach of something like normal conditions that it is operating practically full time at its several plants and storing such part of its product as cannot be disposed of. The automobile trade is now the most important contributor to machine tool business, as a very large output of cars is planned for 1909. Prices continue extremely firm and no cut is anticipated.

The Spooner-Mathewson Co., 140 Cedar street, New York City, recently incorporated under New York laws with a capitalization of $10,000, will conduct an engineering business,

making a specialty of power plant, sheet and tube mill and general sheet metal equipment, and special machinery for a variety of purposes. The new company succeeds to the business of McClave, Rimmer & Co., and will continue as sales agent of the Ridgway Dynamo & Engine Co., Ridgway, Pa. Officers are: President, Ernest T. Mathewson; vice president, Peter G. Rimmer; secretary and treasurer, H. W. Spooner. Mr. Mathewson was formerly general sales manager of the Standard Machinery Co., Providence, R. I., and New York manager for the Waterbury Farrel Foundry & Machine Co. Messrs. Rimmer and Spooner were formerly connected with the firm of McClave, Rimmer & Co.

Marshall Stevens, who is now in this country in the interests of the Trafford Park Estates, Ltd., Manchester, Eng., reports that he is negotiating with a number of American manufacturers, several of whom are in the machine tool line, for the location in that country of manufacturing works rendered necessary by the new British patent law. Mr. Stevens will be in this city until the end of the week, making headquarters at the office of the Manchester Ship Canal Co., Produce Exchange building.

The W. S. Rockwell Co., recently incorporated under New Jersey laws with a capital of $100,000, is now located at 50 Church street, New York City, where it will carry on a business of furnace engineering and will design and build various types of fuel oil appliances. W. S. Rockwell, president of the company, is a well known designer of melting furnaces and other fuel oil apparatus. The other officers are Joseph A. Doyle, vice president; E. S. Long, secretary and treasurer, and Geo. A. Yagle, assistant secretary and treasurer. The new company is already engaged in filling several important contracts. Manufacturing facilities have been arranged and for the present no equipment will be required.

The Dyett Sand-Lime Brick Co., New York, is having plans prepared for a complete sand-lime brick plant at Port Jefferson, L. I. The main buildings will be of structural steel and corrugated iron, 65 by 200 ft., with a timber wharf, 25 by 200 feet. The equipment will consist of brick-making machinery, conveying apparatus, industrial trackage and cars, complete power and electrical plant, etc. It is expected that the work of construction will be rushed. Contracts will be let by the engineer, Frederick L. Smith, 5 Beekman street, New York City.

MIXED CONDITIONS

On the Pacific Coast—Freight Movement Increases.

Office of THE IRON TRADE REVIEW,
302 Pioneer Building,
Seattle, Wash., Sept. 25.

Mixed conditions still prevail in the Pacific coast iron trade and while some lines show substantial gains, others indicate losses that prevent the average volume of trade from increasing with any remarkable celerity. This week pig iron and coke are having their turn and are showing strength after weeks of inactivity. Buying orders from all sections of Washington and Oregon are reported in increasing volume and the market is decidedly stiffer, although the pressure has not been sufficient to advance prices. Whether this movement is one of the periodical spurts characteristic of the market in the past nine months or actually presages the expected fall activity, is not yet certain. The lumber business is showing continued improvement; Northern Pacific officials report a decided increase in volume of freight shipments; collections are better. All these are encouraging factors. On the other hand, there is no demand for steel from the ship yards and building and other projects requiring structural material are slow in maturing.

The Pacific Iron Works, Portland, Ore., is enlarging its plant to provide additional stock room for structural material. A wing, 50 by 150 feet, is being added to the old building, in which will be installed a Bryant cold saw for cutting 24-inch beams, a Cleveland 10-ton punch and some miscellaneous smaller tools.

Union Iron Works, St. Johns, Ore., has been incorporated by W. C. Franklin, I. C. Morris, and G. E. Ohsfeldt for $10,000 to engage in a general iron manufacturing business, making a specialty of loggers' blocks, tools and saw mill machinery. The new firm has taken over the W. C. Franklin plant at St. Johns. The company operates no foundry at present, but may do so soon.

Two bridge projects of interest have developed in Oregon. The Portland city council has passed an ordinance authorizing the sale of $450,000 of city bonds to provide funds for a new bridge to cross the Willamette river at Madison street. The bridge will be at least three spans including a heavy draw span. The Ontario, Ore., bridge commission has advertised for bids for a combined steel and wood truss to cross the Snake river at Ontario to cost about $20,000. The bids will be opened Oct. 5.

Grays Harbor Sheet and Metal Works, Aberdeen, Wash., has a contract for a shale tile roof for the Aberdeen Mausoleum Association and is in the market for 4,000 lineal feet of 1-inch angles and 2,000 lineal feet of 3-inch T iron.

Washington Steel & Bolt Co., Edmonds, Wash., is building an 80 by 44 foot extension for warehouse purposes.

It is understood that the Northern Pacific railway is negotiating for a strip of land in Tacoma which will include the Puget Sound Iron & Steel Co.'s plant. In case the railway purchases, the steel company will move its foundry and machine shop to a 10-acre plot which it now owns on the Tacoma tide flat.

The Rohrbacher Automatic Air Pump Co. has decided to establish a factory at Blaine, Wash., to manufacture a line of automatic air pumps. The Rohrbacher machine shop at Blaine has been purchased by the air pump company and closed for outside work.

The Northern Pacific railway is submitting plans to the board of public works of Seattle for an overhead steel crossing over the company's switch yards at Holgate street.

The Washington Water Power Co., Spokane, Wash., has ordered from the General Electric Co. a new 9,000-kilowatt Curtis turbo-generator for its steam plant at Spokane. The work of preparing the plant for the erection of the new unit has already commenced. This addition will increase the steam plant capacity of the Washington Water Power Co. to 12,000 kilowatts, with a possibility of carrying 18,000 kilowatts during the peak loads.

Work on the foundations for the new power plant for the navy yard, Puget Sound, Bremerton, Wash., is being pushed rapidly. The new plant will cost $450,000, the building will be a steel frame structure and an effort will be made to complete the plant by next May.

The Seattle Refrigerating Co. has been incorporated for $300,000 for the purpose of building a refrigerting plant and a street pipe line system. Three buildings are contemplated, a power house, warehouse and pipe line building to cost $125,000. The machinery will cost $100,000 and the pipe line, $75,000. The plant will be similar to the one now in operation at

Kansas City. N. R. Sibley is president.

The Newport Iron Works, Newport, Wash., has outgrown its present quarters and is about to build a one-story cement block machine shop, 60 by 100 feet, to cost $7,500. More machine tools and a small electric plant will be added and the company will take up the manufacture of some specialties in addition to its repair and jobbing work.

GAYLEY PROCESS

And Other Subjects to Be Discussed at Meeting at Chattanooga.

The meeting of the American Institute of Mining Engineers, to be held at Chattanooga, Tenn., beginning Thursday evening, Oct. 1, promises to be of unusual interest to iron and steel manufacturers. Sessions for the reading and discussion of papers will be held at the Hotel Patten, Thursday evening, Friday morning and afternoon, Saturday morning, and, if necessary, Saturday afternoon. On Thursday evening, besides the formal welcome of the Institute, important addresses, explaining the present industrial conditions of the south, are expected, and the address of John Hays Hammond, president of the council of the Institute, on "Professional Ethics," will be delivered. Friday morning, papers relating to iron and steel will be presented, the especially important feature being hitherto unpublished records of practice with the "Gayley Dry Blast Process." Friday afternoon, papers on economic geology will be presented, and on Saturday, papers on various branches of mining and metallurgy. Among the papers to be presented are the following:

Iron and Steel.

Experience with the Gayley Dry Blast at the Warwick Furnaces, Pittstown, Pa., by Edwin B. Cook, Pottstown, Pa.

Gayley's Dry Blast at the Works of the Illinois Steel Co., by Theodore W. Robinson, Chicago, Ill.

Mr. Gayley's Invention, by R. W. Raymond, New York.

Blast-Pressure at the Tuyeres and Inside the Furnace, by R. H. Sweetser, Columbus, O.

An Unusual Blast-Furnace Product; and Nickel in Some Virginia Iron-Ores, by Frank Firmstone, Easton, Pa.

The Relation of Slow Driving to Fuel Economy in Iron Blast-Furnace Practice, by John B. Miles, Philadelphia, Pa.

Report of the Institute Committee on Steel.

The Air-Furnace Process of Preparing White Cast-Iron for the Malleablizing Process; H. M. Howe, New York, and Enrique Touceda, Albany.

Piping and Segregation in Steel Ingots (2nd paper), H. M. Howe, New York.

Economic Geology.

A New Theory of the Geneses of Brown Hematite-Ores, and a New Source of Sulphur Supply, by H. M. Chance, Philadelphia, Pa.

Clinton Iron-Ores in the Birmingham District, Alabama, by Ernest F. Burchard, Washington, D. C.

The Clinton Iron-Ore Deposits of Stone Valley, Huntington County, Pa., by J. J. Rutledge, Baltimore, Md.

The Clinton Iron-Ore Deposits of New York, by David H. Newland, Albany, N. Y.

Studies of Illinois Coals.

Problems Connected with the Examination of and Report on Undeveloped Mineral Properties, by Charles Catlett, Staunton, Va.

Mining and Metallurgy.

Pressure-Fans versus Exhaust-Fans, by Audley H. Stow, Maybury, W. Va.

The Ilsede Hutte Iron Mines at Peine, Germany, by Lucies W. Mayer, New York, N. Y.

The Management of Mining Operations, by Joseph MacDonald, Guanajuato, Mexico.

LAKE SUPERIOR CORPORATION ISSUES ITS ANNUAL REPORT.

The annual report of the Lake Superior Corporation for the year ending June 30, 1908, was recently issued, making an interesting financial showing of the operations of not only the corporation, but also of all its subsidiary companies. The income account by items compares with that of the preceding year as follows:

	1908.	1907.
Interest on invest. sec.	$491,613	$527,982
Misc. net inc.	75,003	150,029
Total inc.	$566,616	$678,011
Coup. on outst. 1st mtg. bds.	475,225	500,000
Int. accrd. on 1st mtg. bds.	.....	.....
Balance	$ 91,391	$178,011
General exp., taxes, etc.	63,522	148,381
Surplus	$ 27,869	$ 29,630
Prev. surplus	471,313	591,683
Total surplus	$499,182	$621,313
5 per cent div inc. bds.	.....	150,000
Profit and loss sur.	$499,182	$471,313

In addition to interest and dividends paid, as stated, the subsidiary companies have reserved $580,386 from net earnings for the year for extensions and working capital.

Speaking of the operations of the various subsidiary companies, President Charles D. Warren says in his annual report:

The financial conditions that obtained during the past year have caused the railway companies of Canada to reduce the extensions of their lines to a minimum, and as a consequence rails were ordered only where repairs or additions were imperative. This reduction in railway construction produced a curtailment of rail orders, as a result of which it was necessary to close down the steel plant for about one-third of the year.

Notwithstanding the plant was idle for so large a portion of the year, the Algoma Steel Co. is able to show an excellent record, showing net earnings of $501,258, after deducting all charges, including interest on advances, with an output for the year as follows:

	Tons.
Pig iron	135,852
Standard steel rails	142,958

The Lake Superior Iron & Steel Co., Ltd., has had a very successful year's operation, having produced 31,773 tons of open-hearth steel, from which were rolled 25,321 tons of open-hearth rails, with earnings for the year of $51,243.

The Lake Superior Power Co. shows a surplus this year of $265,943 in excess of expenses of operation, after deducting all charges, including interest on advances. This excellent result is due largely to the increased shipments of ore from the Helen mine. The ore from this mine has increased in quantity and improved in quality in the lower levels which have been worked during the past year; 150,623 tons of ore have been mined, being an increase of 57,000 tons over the previous year.

The net earnings of the Algoma Central & Hudson Bay Railway Co. show a substantial increase over those for the year ending June 30, 1907. The full measure of profit which this road is capable of earning cannot, however, be realized until the road is extended to the Canadian Pacific railway and the National Transcontinental railway. Negotiations are now in progress to that end.

The year's operations of the various subsidiary companies show a net surplus of $1,072,000, an amount in excess of the net earnings of the previous year by $214,879. This result is particularly gratifying, in the face of the closing down of the steel plant for a considerable period, and in view of the general financial depression which has prevailed throughout Canada and the United States during the year, and emphasizes the excellent earning capacity of the subsidiary companies quite aside from the steel plant.

For the past four years the subsidiary companies have been largely dependent upon loans from banks to enable them to purchase the necessary materials for the transaction of their business. The financial panic of 1907, however, made it clear that it was unsafe for the subsidiary companies to depend upon outside sources for so large a proportion of their necessary working capital, and their directors have, therefore, determined that a substantial part of the year's earnings must be retained for working capital and for making necessary repairs and additions.

The Swelling of Cast Iron.—Many tests have been carried on to ascertain the percentage of swelling that takes place in cast iron and these tests have shown the possibility of producing a swelling of as much as 40 per cent in the volume of cast iron, by heating and cooling. A bar measuring 1 inch square by 14.8 inches long was heated and cooled in a gas furnace 27 times, the high temperature being 1,450 degrees Fahr. Careful measurements then showed the bar to be 1⅛ inches square and 16½ inches long. It is thought that this fact explains many of the difficulties experienced with cast-iron fittings for use with superheated steam, where the same sort of alternate heating and cooling takes place.—*Power and The Engineer.*

The annual meeting of the American Locomotive Co. will be held Oct. 20.

PROGRESS IN THE ELECTRIC IRON AND STEEL AND FERRO ALLOY INDUSTRIES—I

By John B. C. Kershaw

The electric furnace methods of iron and steel manufacture and the similar methods for producing ferro-alloys continue to make rapid progress, and the following list of places where one or other branches of this new industry are carried on, shows how widely the electric furnace method has extended:

France.—La Praz, Allevard, Saut du Tarn, Unieux, Notre Dame de Briancon, Ugine, Creusot, St. Michel, Livet, Kerrousse.

Germany.—Remschied, Essen, Volklingen, Gleiwitz.

Austria.—Jaice, Mattrei, Kladno, Vocklebruck.

Switzerland.—Gurtnellan Schaffhausen, Meran, Lonza, Gampel, Courtpin, Montbovon.

Italy.—Turin, Turin arsenal.

Spain.—Araya.

Swenden.—Kortfors, Gysinge, Guldsmedhutte.

United States.—Syracuse, Niagara, Falls, Kanawha Falls, Philadelphia, Holcombe Rock, Heroult-on-the-Pitt.

Canada.—Welland, Niagara Falls.

England.—Sheffield, London.

The majority of these works have adopted either the Heroult or the Kjellin furnace, the former being now generally admitted as the most satisfactory type of arc furnace, and the latter as the best type of induction furnace. A notable installation of the latter is at the Forges d'Eich in Luxembourg, where electric power generated from the waste gases of blast-furnaces, is being employed to produce electric steel.

This furnace is of 500 kilogram capacity, and the writer believes that it represents the first step in a development of enormous magnitude, since the latent heat energy of these gases is at present almost entirely wasted.

An important report upon electric furnace methods of steel production has been presented during 1907 to the St. Etienne Societe de l'Industrie Minerale, by J. Saconey, who with other engineers had been deputed to report for an Italian Company upon the furnaces of Gin, Heroult, Keller, Kjellin and Stassano.

Five charges were worked in the Stassano furnace in the presence of the experts. The furnace and process were stated to be worthless for the production of steel direct from the ore, but it was held to have a field of utility in the manufacture of special steels and alloys from pig-iron and steel scrap. Since the temperature attained in the Stassano furnace was comparatively low, it was not possible to eliminate the sulphur and phosphorus from the raw materials. As regards the Heroult process and furnace, the claim made by the patentee that the impurities of the raw materials can be eliminated, was substantiated. The method adopted for regulating the two electrodes by hand during the first heating of the charge, however, was condemned, and objections were raised to the use of two electrodes in series. The power consumption for this furnace and process was stated to be 600 kilowatt-hours per ton with molten iron, and from 1,200 to 1,400 kilowatt-hours per ton with cold pig and scrap as raw materials. The Girod furnace was of the cylindrical type with the upper electrode 300 millimeters square. The power consumption was 800 kilowatt-hours per ton of steel with cold materials. Comparing the three furnaces and processes, the report states that the Girod furnace was the best of the three named above, since it raised the metal to a higher temperature than the Stassano furnace and avoided by the use of one electrode in place of two in series, some of the difficulties attaching specially to the Heroult furnace and process.*

The figures given by Saconey for the power consumption per ton with the Heroult and Girod furnaces, may be usefully compared with those given by the writer, in the final chapter of his book on this subject. In the case of the Heroult furnace the power consumption is higher, while for the Girod furnace it is lower, and this no doubt accounts for the favorable opinion formed by Saconey of the latter furnace. Eichoff has criticised this report as unfair to the Heroult furnace, and has pointed out that the steel made in the Girod furnace during the trials which Saconey witnessed at Ugine, was not equal in purity to that made with the Heroult furnace at Remscheid.

Further information relating to the total works costs of producing steel by the Girod furnace, was given in a discussion upon the electro-metallurgy of iron and steel at a meeting of the French Society of Civil Engineers. The following figures were given by Girod for the operation of his 250-kilowatt furnace at Ugine.

	Total works costs per ton of steel, francs.
Water-power costing 0.007 francs per kilowatt-hour	21.10
Blast-furnace gas costing 0.02 francs per kilowatt-hour	31.50
Steam-power costing 0.04 francs per kilowatt-hour	47.50

L. Guillet, the well-known French metallurgist, opened this discussion, and stated that electric furnace steel was superior to ordinary steel in several respects, especially in its resistance to shock; this superiority being explained by its higher temperature when tapped. This high temperature allows the more complete separation of impurities, facilitates the escape of imprisoned gases, and leads to more perfect refining by the completion of the chemical reactions. The practical significance of this superiority is shown by the great demand for these products of the electric furnace in the motor-car industry, the chrome-steels, nickel-steels, and tungsten-steels made in this way being greedily snapped up by the manufacturers of motor-car axles and cranks. A further advantage of the electric furnace method of production is, that steel of any desired composition as regards the alloyed metals, can be easily produced.

A modified form of the Kjellin furnace has been designed by Rochling and Rodenhausen, and erected at Volklingen in Germany. This furnace has the form of the figure 8. The annular space holding the metal is built up around each leg of the transformer, and these meet in the center and join to form a wide trough common to the two loops of the complete figure 8. This furnace is also provided with fixed electrodes at each end of the central trough, and the induced current is here reinforced by one flowing from end to end of the trough. These electrodes are formed of iron plates covered with a mixture of magnesite and graphite. Slight electrical advantages result from the adoption of this form of furnace, and the electrical efficiency of the furnace is said to be rather higher than that of the original Kjellin form.

According to Engelhardt, however, the chief gains are metallurgical in character. The chemical changes depend upon temperature for their completion, are affected, not in the annular rings, but upon a hearth similar to that of the Siemens-Martin furnace, and a better control can thus be kept over the refining process. This combination type of furnace, using both direct and induced current for heating the charge, is said, in fact, to be specially suited for dealing with impure raw materials, and it thus enters into competition with the Heroult arc type of furnace for refining purposes. The following list shows the number of large induction furnaces, of either the Kjellin or Rochling-Rodenhausen type, now in operation.

Kjellin furnace.—Volklingen, Essen, Gleiwitz, Kladno, Vocklabruck, Gurtnellan, Araye, Sheffield, London, Gysinge,

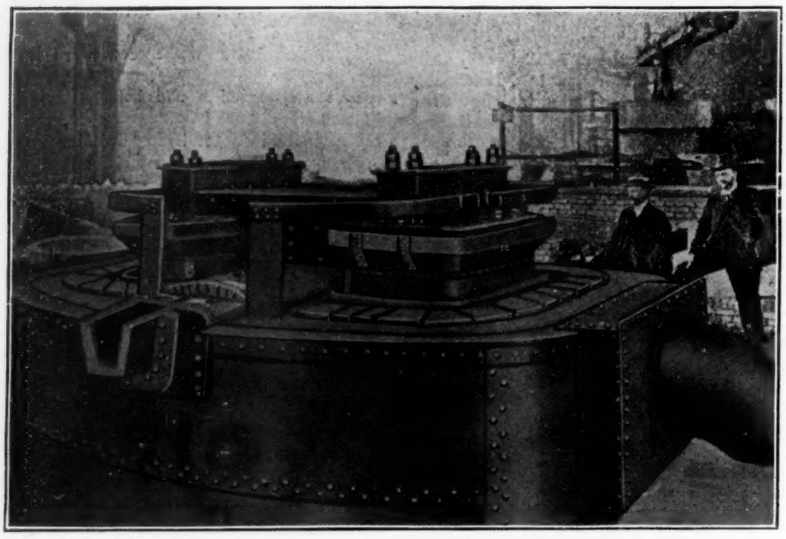
*Science Abstract, No. 879, 1907.

Guldsmedhutte, Philadelphia, Niagara Falls (2); total 14.

Rochling-Rodenhausen furnace.—Volklingen (2); Dommeldingen (1); total 3.

The largest of these furnaces are the Kjellin furnace erected at Volklingen and at Essen, each of 750 kilowatts, and taking up to 8,500 kilograms of metal per charge. The furnace erected at Sheffield is stated to be of 175 kilowatt capacity, while that in London is 60 kilowatt and yields 100 kilograms per charge. Fig. 1 shows the combination form of Rochling-Rodenhausen furnace.

Another modified form of induction furnace has been constructed by the Elektrometall Oktien Gesellschaft in Sweden. In this furnace the annular space holding the metal is divided into



ROCHLING-RODENHAUSEN FURNACE FOR STEEL PRODUCTION.

two portions, one of which forms an incomplete circle arounu one leg of the transformer, while the other consists of a loop formed by two neighboring circles which are so arranged that they form with the center portion of the furnace one continuous trough. This construction of furnace enables one to employ a considerable length with small area, and the cross section of the bath can thus be made extremely small with corresponding increase of the ohmic resistance. The conditions for obtaining a good working factor are thus very favorable.

The induction furnace erected at Gurtnellan differs from that built at Volklingen chiefly in the arrangements made for tilting when discharging. At Gurtnellan a mechanical tilting device is employed, while at Volklingen and at Araya in Spain, an electric motor is used for this duty.

All the induction furnaces hitherto erected and worked are designed for use with single phase current, and generators have been designed and built specially for the operator of these furnaces. The details of the generator used at Volklingen are as follows: The generator is a six-pole machine, running at 100 revolutions per minute. The capacity is 1,188 kilovolt-amperes at cos $\phi = 0.63$, and 4,500 volts, or 1,829 kilovolt-amperes at cos $\phi = 0.91$, and 4,900 volts electro-motive force.

The stator of this machine is wound for single phase current. The pole-pieces are lamellated and are provided with ventilating openings, on both sides, which increase the natural current of air through the machine when in motion. The exciting dynamo has a capacity of 35 kilowatts and is driven by leather belting from the shafts of the larger machine. The dynamo is direct coupled to a compound steam engine, with condenser, built by Escher Wyss & Co. of Zurich.

As regards the greater purity of the steel made at higher temperatures than those of the ordinary Siemens-Martin furnace, Wolff has published figures recently giving tests for the September, 1907, productions of the La Praz works.

The steel in this case was made from the cheapest form of scrap and ore, in the usual type of Heroult crucible furnace, with combined arc and resistance heating.

The raw material showed tests high in phosphorus and sulphur, while the product was high grade tool-steel intended for consumption in tool works, situated in France and abroad. The sulphur tests during September, 1907, varied between the limits 0.004 per cent and 0.013 per cent, the average being 0.008 per cent. As regards the phosphorus contents of the finished steel, this averaged 0.009 per cent, the highest test recorded being 0.014 per cent and the lowest 0.004 per cent.

The Heroult steel refining furnace is employed at the works of the Halcomb Steel Co., Syracuse, N. Y., the raw material in this case being scrap, which is subjected to a preliminary heating in a Wellman gas-fired furnace. At Heroult-on-the-Pitt, Cal., pig iron is produced in the Heroult electric smelting furnace, while another electric smelting plant is about to be erected at Pocatello, Ida., by the American Falls Electric Smelting & Refining Co.

A MANUAL FOR ENGINEERS AND BUSINESS MEN.

The University of Tennessee publishes a manual for engineers and businessmen, which is a booklet of 250 2¾ x 5½ pages of tables and other data. The work is compiled by Charles E. Ferris, professor of mechanical engineering, and comprises the tables usually found in handbooks, such as areas and circumferences of circles, tables of squares, cubes and reciprocals, trigonometrical functions, weights and dimensions of various commercial products, such as bolts, rivets, bars, etc., tables of logarithms, both common and hyperbolic, steam tables, tables for the flow of steam through pipes, chimney tables, fan and blower tables, earthwork tables, water wheel tables, information on strength of materials and transmission of energy, including electricity, considerable information on wire rope, together with a series of interest tables, showing the interest on various sums at various rates for any length of time. The book comprises a vast amount of useful information compressed into a size which can conveniently be carried in the vest pocket. It is sold by the University of Tennessee for 50 cents.

Steel Passenger Cars in Service.—Statistics collected by *Engineering News* show the total number of steel passenger cars in service or on order by the railways of the United States to be 1,228. About 75 per cent of these are in suburban or rapid transit service. They are divided among the various companies as follows:

Pennsylvania	208
New York Central	191
Long Island	185
Erie	4
Southern	3
Illinois Central	17
Union Pacific	17
Southern Pacific	3
St. Louis & San Francisco	31
New York, New Haven & Hartford	2
Pullman Co.	1
Interborough (New York City)	350
Hudson & Manhattan (New York City)	50
New York & Queens Co.	40
Metropolitan Elevated (Chicago)	1
Philadelphia Rapid Transit	80
Boston Elevated	45

A COST SYSTEM FOR A LARGE MANUFACTURING PLANT[1]

By Oscar E. Perrigo

At this late day there seems little necessity for arguing the need of a cost system. Yet there are managers who believe that the cost system is only another method of increasing office expenses. Questioning this manager will probably show that he has what he calls a cost system and that he imagines he knows the cost of his product. His system will probably be found to be one that has grown out of the old-time methods of commercial bookkeeping and to which has been added from time to time a plan, or a card, for this detail and that; the method being arranged sometimes by one man and sometimes by another, with no general plan to guide these detail matters. If the detail is a matter of shop work a shop man is likely to arrange it from a shop man's point of view without much regard to its effect on the commercial accounts or the office methods of the concern; while if the matter should come to the attention of the manager and he sets a bookkeeper to devise a plan, he will be very likely to view the matter from the bookkeeper's position without regard to the shop conditions which it may affect, or which may be affected by it.

Thus the work of attempted cost keeping becomes a growth and not a system in any proper sense of the word. Much of the work is duplicated, and there is very likely to be a maximum of expense and a minimum of efficiency. The information gained under such circumstances and by such methods is of an uncertain character and of no great value in determining actual facts in relation to the conditions of the business.

A manager may think that because he contracts annually for his raw material there are no fluctuations in prices to be considered, and as his work is all done "by the piece" he knows all about his costs. But these two facts form a small number of the component parts of the cost of manufacture, since there are many other factors that should be taken into the accounts, and which may be considered in the commercial bookkeeping of the concern, but which never seem to receive proper attention in their relation to the actual costs of the product.

Another manager may feel that he has a sure basis upon which to base estimates. His plan is to know what his material, labor and expense in each department costs each month, basing his distribution of expense on the number of men employed in each department. Upon inquiry we find that such matters as interest, taxes, insurance and the like are accounted for but once a year and that he does not consider interest as a manufacturing expense, as he owns the plant himself. His books will therefore show fictitious profits, possibly profits where there are really losses, when all the factors of expense are properly considered. Still another manager has a patented specialty with which there is no competition and therefore he enjoys exceptional opportunities for making good profits on his output. He feels that he is making money under present conditions, and he does not need to know his costs any nearer than he does with his present system, which, by the way, is not as good a method as that of the last mentioned manager.

A fourth manager will say that he does not have nearly as much trouble in finding his costs as he does in increasing the volume of his product. He does not know, or has forgotten to consider, that one of the prime objects of a good cost system is to increase the product by knowing exactly what the costs are for each department, each piece, and each operation on each piece; by which means are stopped unnecessary wastes of material, and what is of vastly more consequence, of labor, which if economically used would result in a higher degree of efficiency of machines and men, and consequently in an increased output.

The requirements of a good cost system are quite definite and important in the management of a manufacturing enterprise as well as in the duty of accurately accounting for the costs of the work. The most prominent are as follows:

1. To give within a reasonable time after the work is done the actual and complete costs, including every item of expense of the ownership and operation of the plant; of the operations of the plant as a whole; of the operations of each department of the plant; of the costs of each operation on machine parts; of the complete cost of each machine part; of the cost of assembling the groups of related parts; of the cost of erecting the completed machine, of finishing, testing and shipping it; and the costs of advertising, selling or marketing the product.

2. It should tend to the closest economy in the purchase of all material, and in the care, issue, accounting for, and use of it.

3. It should secure the greatest economy of the wages paid for labor, not through lowering wages, but through increasing the efficiency of the workmen by accurately accounting for their work and providing for special remuneration for special individual effort and efficiency.

4. To decrease the cost of all manufacturing operations through accurate records of past and present performances, and their logical analysis and comparison; by which improved methods may be formulated and the efficiency of men and machines secured.

5. To increase the volume of output of the concern by means of the economies mentioned in the last paragraph, whereby the increase of efficiency, the shortening of the time necessary to do work, and the decrease of costs, have combined to largely increase the producing capacity of both machines and men.

6. To increase the profits of the concern, by reason of the fact that costs of all parts of the work are accurately determined, correct estimates may be made with confidence and closer figures may be given upon proposed work than is possible with a rival firm not so accurately informed as to costs; whereby the concern stands upon a better basis in getting new business. Losses are also avoided, as an accurate knowledge of costs shows the manager what work to avoid as unprofitable.

7. The cost system must not only show a correct record of all manufacturing operations and all fluctuations of costs, but it must show why these fluctuations have occurred, and fix the responsibility, first upon the proper department, and second upon

[1]Thirteenth and final article on Shop Management and Cost Keeping.

the official or individual who may be responsible.

It should be thoroughly understood and appreciated that the cost system and the shop methods are very closely related and that they should not only work in harmony with each other, but also, with the general accounting system of the concern so that each of these branches of the work may assist and support each other in attaining that success which comes from the union of efforts on the part of all concerned.

While some of the results here enumerated are not strictly within the province of the cost system, and belong more particularly to the work of shop management, it should not be forgotten that these two branches of the work are, and properly should be, so interwoven with each other that it is not practicable to discuss the one without including more or less of the other.

In inaugurating a cost system there are certain calculations to be made as to the fixed charges or expenses, that are of the utmost importance, and without which it is impossible to formulate a complete or accurate system of cost accounting. It is not sufficient to say that some of these are commercial costs, with which the manufacturing department have nothing to do, but which will be properly taken care of by the bookkeepers. It is not possible to obtain accurate costs of manufacturing if these expenses are omitted from the accounts of manufacturing operations, and distributed as commercial charges after the product is turned out. Interest, taxes, insurance and like charges are as properly a part of the cost of manufacturing as wages of workmen, or the cost of material. Machines vary greatly in first cost, hence there is much difference in interest charges. They also vary in a similar degree as to the power to drive them and the cost to house them, hence in the real estate and similar charges properly assesssed against their operation and output. There are many other and equally good reasons why all these expenses should be taken into the accounts of manufacturing operations at the earliest moment.

By accurate accounting for manufacturing operations is not meant simply all the expenses of a department as compared with all the output of that department. Costs should be in detail and not only cover an order for a machine, but the cost of its several parts, and if a portion of a regular production order we should have the costs of the different operations on the parts, and also the cost of assembling groups of related parts and the erection, finishing and testing the machine or device.

Therefore we must arrange the plan of the general accounts and work out the necessary calculations before entering upon the detailed work of the plan. The classification of accounts and the methods of using them will be as follows, namely:

1. *Real Estate.*—(A) Interest, 5 per cent on cost of land and preparing it for the buildings, and on the cost of buildings and fire protection equipment; (B) Depreciation of real estate unless this charge is balanced by the appreciated value of the land; (C) Maintenance and renewals of buildings. (D) Fire insurance and taxes. The sum of these expenses for a year is divided by the number of square feet of floor surface of the entire plant. This gives a burden per square foot per year. It is reduced to an hourly rate by dividing it by 2,700.

2. *Power.*—(A) Interest 5 per cent on cost of equipment for power, generation and transmission, and its installation; (B) Depreciation, 5 per cent; (C) Maintenance and renewals; (D) Fire and boiler insurance; (E) Floor rate of engine and boiler room as ascertained in (1); (F) Cost of fuel, water and supplies; (G) Wages of engineer and fireman. The sum of these expenses for a year divided by the horsepower generated, and this amount by 2,700 gives the cost per horsepower-hour.

3. *Lighting.*—(A) Interest, 5 per cent on equipment and its installation; (B) Depreciation, 6 per cent; (C) Maintenance and renewals; (D) Power charged per horsepower as in (2); (E) Supplies; Wages of electrician, etc. The sum of these expenses for a year is divided by the number of lights, on the basis of incandescent lamps (allowing 10 incandescent lamps as equal to 1 arc lamp), and dividing this amount by the number of hours of lighting during the year. An hourly cost is thus obtained for each light. With this factor the cost of lighting any and all departments is readily computed. As there will be considerable variations from month to month this account should be made up monthly.

4. *Heating.*—(A) Interest, 5 per cent on equipment and its installation; (B) Depreciation, 6 per cent; (C) Maintenance and renewals; (D) Power, or its equivalent in steam for heating; (E) Labor as necessary. The sum of these expenses divided by the space to be heated (100 cubic feet being taken as a unit), gives the cost of heating, from which the expense of heating any room or department may be calculated. This account is to be made up monthly as it will fluctuate considerably from month to month.

5. *Shop Transportation.* — Shop tracks, cars, elevators, cranes, etc. (A) Interest, 5 per cent on equipment and its installation; (B) Depreciation, 5 per cent; (C) Maintenance and renewals; (D) Power to operate cranes, elevators, etc.; (E) Wages of operators. This being a general account floor rate is not charged.

6. *Tools and Fixtures.* — (A) Attachments and fixtures made and used upon a certain machine are considered a part of that machine and added to its value; (B) Regular hand tools, as drills, reamers, taps, dies, etc., are a part of the shop equipment and the interest on their cost, plus the expense for maintenance and renewals should be added to general expense; (C) Special tools necessary for work on a certain order are charged to that order. If the order finally becomes a regular line of work these tools will be charged to general expenses as above.

7. *Materials.*—This includes all raw and manufactured materials and supplies; purchased parts, whether in the rough, partly or completely finished; which are applied directly to the product. It will require space to store this material, men to handle, issue and account for it; these expenses become a part of the general expense account and are charged as overhead burden. The items will be: (A) Floor rate for space occupied for storage; (B) Interest, 5 per cent on average amount invested in material; (C) Insurance on material; (D) Lighting and heating store room; (E) Labor, handling and accounting for material.

8. *Non - Productive Labor.* — (A) Wages of all employes not working directly upon the product. This includes superintendent, foremen, inspectors, laborers, clerks and others, except when on work properly chargeable to production orders.

9. *General Office.*—(A) Real estate charges as explained in (1); (B) Interest, 5 per cent on furniture and equipment; (C) Insurance, 5 per cent on same; (D) maintenance and renewal of same; (E) Office supplies; (F) Lighting, as explained in (3); (G) Heating, as explained in (4); (H) Legal, traveling, telegraph, telephone,

postal, express, freight and trucking expenses.

10. *Machine Rate.* — Made up for each machine. (A) Interest, 5 per cent on value and cost of installation; (B) Depreciation, 5 to 10 per cent; according to kind of machine, class of work, and hours used per week, month or year; (C) Maintenance, renewals and repairs; (D) Floor rate, including space occupied by the machine and the space necessary for handling its work; (E) Power for operating the machine. The sum of these expenses for a month or more is to be reduced to an hourly rate.

11. *Man Rate.* — (A) Floor rate; (B) Consumable tools and supplies; (C) Liability insurance. The floor rate chargeable to each man is computed as follows: From the entire area of floor surface, subtract the amount assigned to machines plus that occupied by power plant. Divide the remainder by the number of productive men. This method will place the proper burden upon such departments as the assembling room, which contains few and often no machines. The amount so found is reduced to an hourly rate to be charged as a burden to all productive labor. This rate is assessed separately to the departments so as to equalize the burden in departments equipped with machines of varying numbers and sizes.

12. *Productive Labor.*—(A) Wages of all employes working directly at hand or machine operations on the actual product; (B) Man rate as explained in (11).

The foundry presents rather a different problem than the other departments, and although it is possible to consider it as one of the regular manufacturing departments, its accounting system can be much more satisfactorily handled if it is considered as a separate concern, connected with the manufacturing departments only through the general office. In this case the real estate charges will be separately assessed. There will be a considerable difference as to lighting and heating expenses, the latter from the fact that only about one-half the heat per unit of space is necessary.

The peculiarity of making up the costs is that while in the machine shop there are three main factors to be considered, namely, labor, material and overhead burden; experts in foundry accounting have brought in a fourth factor, called for convenience, tonnage expenses. The account for the foundry will then stand as follows:

13. *Productive Labor.*—(A) Wages of all molders and men on molding operations; (B) All core room labor; (C) All helping on either molding or core making, flask fitting, casting cleaning, etc.

14. *Material (or Metal).*—(A) All pig iron charged into the cupola; (B) All purchased and foundry scrap, less scrap recovered and castings condemned in foundry.

15. *Overhead Expenses.*—(A) Real estate expenses as explained for shop; (B) A proper proportion of general office expenses, according to the relative capacity of the foundry and the manufacturing departments; (C) Light, heat and power, except where otherwise specified; (D) Pattern storage, trucking, sundry foundry supplies.

16. *Tonnage Expenses.*—(A) All cupola expenses, including labor and material for its maintenance and fuel for operating; (B) Power; (C), Sand, gravel, facings and similar molding and core making supplies; (D) Lumber for maintenance of flasks; (E) Labor for unloading materials and disposing of refuse, dirt, etc.; (F) Labor and materials for shop castings; (G) Labor and materials for replaced castings; (H) Labor for recovering foundry scrap.

The cost of castings is made up of these four classes of expenses. The relations existing between the amount of iron charged into the cupola and the good castings produced, otherwise the melting and casting losses, are found by subtracting from the amount charged into the cupola, the amount of foundry scrap recovered, plus the defective castings condemned in the foundry. The amount thus found, divided by the pounds of good castings produced, will show the relation between the cost of iron in the good castings to the cost of pig iron. In the regular routine work of the foundry a daily report of the melting and casting operations is made on the form shown in Fig. 1, which shows a complete account of these operations, including the iron and fuel used and the losses, both in pounds and as percentages, from which the daily results may be compared so as to show the varying degrees of efficiency of these operations. The time keeping system of the foundry is practically the same as that described later for the manufacturing departments. All material, of whatever kind and wherever located is in charge of the store keeper, and all issues made from it is accounted for to him by the foundry clerk, who attends to nearly all the foundry accounts in the general office.

The pattern shop is considered as one of the manufacturing departments and its product is similarly handled. All material used is theoretically in charge of the store keeper although much of it, particularly lumber, is stored in the pattern shop. The system of time keeping is the same as in the manufacturing departments. The patterns produced are in three classes. 1. Those for regular work, or the regular product of the foundry, are considered as a part of the plant equipment and therefore an asset. 2. Those made for a special order and

DAILY CUPOLA REPORT 190

MATERIAL	WEIGHTS	MATERIAL	WEIGHTS		
PIG NO. 1	7500	METAL CHARGED	28000		
PIG NO. 2	10000	METAL POURED	26300	26300	
PIG NO.		6 1/10 P.C. MELTING LOSS	1700		1700
PURCHASED SCRAP	8200	GOOD CASTINGS	22500		
GATES AND SPRUES	1500	SHOP CASTINGS	100		
MILLED SCRAP	800	DEFECTIVE CASTINGS	1050	23650	
STEEL SCRAP		MOLDING AND POURING LOSS		2650	2650
TOTAL	28000	GROSS LOSS			4350
CUPOLA COKE	3650	LESS GATES AND SPRUES	2650		
CUPOLA COAL		LESS MILLED SCRAP	400		3050
CORE OVEN COKE	500	4 6/10 P.C. NET LOSS			1300
CORE OVEN COAL		BLAST ON 1.15 P. M. OFF 5.20 TIME H. M.			
TOTAL	4150	IRON MELTED PER 100 LBS. Coke 7.67		Johnson	

FOREMAN

THE IRON TRADE REVIEW

FIG. 1—DAILY CUPOLA REPORT CARD. 4 x 6 INCHES.

charged to that order, and if for a customer, become the customer's property. 3. Temporary patterns, core boxes and repairs of regular patterns, are considered as maintenance of equipment expense, and so charged.

The sales department, while connected with the general office, is a separate matter in relation to its account, in consequence of its work being that of marketing the product, and its expenses being entirely commercial expenses. It must bear its proportion of the real estate charges of the general office building according to the space occupied by it, and its entire expenses are distributed as a percentage over the product after it is completed and ready for market.

Actual manufacturing operations begin with ordering the work into the shop. In every well organized and systematically conducted manufactory there should be nothing commenced, until definite written orders, regularly issued by competent authority, have been received. These orders should specify just what is to be done, and generally give a time limit for doing it. Where a lengthy description is necessary, and cannot be given on the regular order blank, reference should be made to specifications or drawings, or both, attached to the order and forming a part of it. There should be nothing left indefinite or about which a question may arise in the future as to the precise nature of the work described. The importance of this point cannot be overestimated or too strongly emphasized. In cases of emergencies a new order may be issued, or an existing order changed or suspended by a subordinate official who will report the fact to his superior as soon as possible, giving the reasons for his action.

Theoretically all orders are issued by the general manager or the factory manager, as the case may be. If there is a general manager in charge of the entire business, and a factory manager in charge of all manufacturing operations, both will issue such general orders as are appropriate to their positions. Thus the general orders for the regular product of the plant will be issued by the general manager, while the others for: 1, operation of the plant; 2, maintenance and renewal of equipment, and 3, maintenance and renewals of real estate will be issued by the factory manager.

The form of these orders are as follows: Fig. 2 shows the general production order issued by the general manager for making a lot of machines for stock. The date is given when the machines are to be ready for testing and also when ready for shipping. These dates may be so given as to require a portion of the machines to be ready on one date and the balance later, etc. The date of the receipt of the order in the factory is given as it sometimes happens that considerable time elapses after the office date before it comes to the hands of the factory manager. This date

GENERAL PRODUCTION

ORDER NO. _____ DATE _____

PLEASE MAKE FOR GENERAL STOCK ACCOUNT THE FOLLOWING MACHINES, VIZ:

TO BE ERECTED READY FOR TESTING _____

TO BE READY FOR SHIPMENT _____

RECEIVED IN FACTORY | GEN. MANAGER

THE IRON TRADE REVIEW

FIG. 2—GENERAL PRODUCTION ORDER CARD. 4 x 6 INCHES.

MANUFACTURING MACHINE PARTS

GEN. ORD. NO. _____

SUB. ORD. NO. _____

SUB PRODUCTION ORDER

DATE _____

FOREMAN _____ DEPT. _____

PLEASE DO THE PROPER WORK OF YOUR DEPARTMENT ON _____ PIECES _____

PART NO. _____ MACHINE _____

DRAWING NO. _____ OPERATION CARD NO. _____

YOUR WORK TO BE COMPLETED BY _____

WORK TO BE DELIVERED TO _____ DEPT.

COMPLETED | INSPECTED | RECEIVED BY _____ DEPT. DATE _____ FOREMAN

THE IRON TRADE REVIEW

FIG. 3—SUB PRODUCTION ORDER CARD. 3 x 5 INCHES.

ASSEMBLING

GEN. ORD. NO. _____

SUB. ORD. NO. _____

SUB PRODUCTION ORDER

DATE _____

FOREMAN _____ DEPT. _____

PLEASE DO THE ASSEMBLING WORK DESCRIBED BELOW

COMPLETED BY | DELIVERED TO | FACTORY MANAGER

DATE

COMPLETED | INSPECTED | RECEIVED BY _____ DEPT.

DATE _____ FOREMAN _____

THE IRON TRADE REVIEW

FIG. 4—SUB PRODUCTION ORDER CARD FOR ASSEMBLING. 3 x 5 INCHES.

SPECIAL PRODUCTION

ORDER NO. _____ DATE _____

PLEASE MAKE THE FOLLOWING MACHINES FOR ACCOUNT OF MESSRS. _____ OF _____

TO BE ERECTED, TESTED, AND READY TO SHIP _____

RECEIVED IN FACTORY _____

WORK COMPLETED _____ GEN. MANAGER

THE IRON TRADE REVIEW

FIG. 5—SPECIAL PRODUCTION ORDER CARD. 4 x 6 INCHES.

with the date of completion shows the actual time the order was in the works. This order is made in duplicate, signed by the general manager, the original being sent to the factory manager and the duplicate filed in the general manager's office.

When this order is received by the factory manager he will write the date "received in factory" and turn it over to the production engineer, in charge of the planning department in which all shop operations, schedules, etc., are made, and from which all orders for work, drawings, shop operation cards, etc., are issued. The production engineer will issue the sub-production orders, Fig. 3. This order gives the general order number and also a sub-order number by which this particular work or operation is identified. It may be issued for a large number of small parts, which are to be made and placed in the finished parts store room to be drawn on requisitions for assembling or erecting; or, it may be issued for the making of the number of parts required for the general production order whose number it bears. If used for the first purpose the words "Gen. Ord. No." will be erased and the word "stock" written below it. The blanks to be filled in this order readily explain themselves. It may be said, however, that the line "work to be delivered to," is understood to mean, when inspected and passed. The dates completed and inspected are given with a receipt to be signed by the foreman of the department to whom the work is delivered.

The orders bear across the end the words "Manufacturing Machine Parts." A similar form, Fig. 4, is used for assembling, erecting, testing, etc., the cards bearing these words in place of the word "assembling." The use of special cards for these classes of work facilitates the accounting for costs. When a special machine, attachment, fixture, etc., is to be built the general manager will issue a special production order, Fig. 5. This order is sent to the factory manager and is handled in a similar manner to the general production order, sub-production orders being issued to the different departments on its authority. Usually specifications and drawings accompany it.

For such work as operation of the plant, maintenance and renewal of equipment, maintenance and renewal of real estate, etc., orders under the general name of plant orders, Fig. 6, are issued. Across the end is printed the particular work which each class covers.

In numbering orders all general production orders are in one series. This serial number is placed on sub-production orders and a serial number for this class added. Plant orders have a third series of numbers. Generally certain limits are prescribed in the use of numbers. For instance, general production orders will be numbered 1 to 2,000, plant orders 2,001 to 5,000. Sub-production orders from 5,001 up. All orders, when the work called for by them is completed, will be returned to the official issuing them unless there is a specific instruction to the contrary.

In making out the sub-production orders the production engineer will first assure himself that there is an ample supply of small parts on hand in the finished parts store room, ordering such as may be needed upon the requisition of the store keeper. Upon

1 OPERATION OF PLANT

PLANT ORDER

NO. _____ DATE _____

FOREMAN, _____ DEPT.

PLEASE DO THE WORK DESCRIBED BELOW AND CHARGE LABOR AND MATERIAL TO THIS ORDER NUMBER _____

DELIVER WORK TO _____

WORK MUST BE COMPLETED _____

COMPLETED	INSPECTED	
		FACTORY MANAGER

THE IRON TRADE REVIEW

FIG. 6—ORDER CARD FOR OPERATION AND MAINTENANCE OF PLANT. 4 x 6 INCHES.

REQUISITION FOR MATERIAL

NO. DEPT. DATE

QUANTITY	DESCRIPTION	VALUE

FOR ORDER NO.

APPROVED	DATE ISSUED

FIG. 7—REQUISITION FOR MATERIAL CARD. 3 x 5 INCHES.

GEN. ORD. NO.
SUB. ORD. NO.

REQUISITION FOR PURCHASE

DATE

PURCHASING CLERK:
PLEASE PURCHASE FOR _____
ORDER NO. _____ THE FOLLOWING ARTICLES

STORE KEEPER

QUAN.	DESCRIPTION	RATE	VALUE

ORDERED FROM		DATE WANTED	APPROVED
DATE ORDERED	DATE EXPECTED	DATE RECEIVED	RECEIVED

FIG. 8—REQUISITION FOR PURCHASE CARD. 3 x 5 INCHES.

the authority of the general production orders he will make such subproduction orders as may be needed to completely cover the manufacturing work and put them in the hands of the proper department foremen so as to enable them to make the necessary requisitions for material. As the keeper will enter rates and values and send the requisition to the cost clerk.

If the material required is not on hand and must be purchased to fill one of these requisitions, or to replenish the store room stock, the form, Fig. 8, will be used by the store

MATERIAL RETURNED

NO. FROM DEP'T.

QUANTITY	DESCRIPTION	VALUE

TO CREDIT OF ORDER NO.

RECEIVED IN STORE ROOM	CREDITED

FIG. 9—MATERIAL RETURNED CARD. 3 x 5 INCHES.

of the department where the defect is discovered will fill in as much of the information as he can and turn the card over to the production engineer who will issue the necessary orders to replace the defective parts. These are generally made on a green card to distinguish them from the original orders. He will enter the facts on the face of the spoiled work card and send it to the cost clerk.

Ordinarily the cards for orders and similar purposes will be put up in blocks with paper sheets, similarly printed, intervening, so that, by the use of carbon sheets, the paper is written upon and the card receives the carbon impression. It is a convenient method of keeping accurate copies. Similar blocks of paper of two colors are used as memoranda sent from one department to another, as it is always useful and many times valuable

GEN. ORD. NO. SUB. ORD. NO.

SPOILED WORK REPORT

DATE _____ DEP'T

PRODUCTION ENGINEER:
THE FOLLOWING WORK HAS BEEN FOUND DEFECTIVE AND IS REPORTED AS SPOILED WORK FOR THE REASONS GIVEN.

_____ FOREMAN

_____ PIECES, PART NO. _____ DRAWING NO. _____

MACHINE _____

CAUSE OF DEFECT _____

CHARGE TO _____ DEPARTMENT

REPORT RECEIVED	REPLACE ORDERS ISSUED

THE IRON TRADE REVIEW

FIG. 10—SPOILED WORK REPORT CARD. (FRONT) 3 x 5 INCHES.

GEN. ORD. NO. SUB. ORD. NO.

SPOILED WORK ACCOUNT

DATE

	VALUE	TOTALS
ORIGINAL VALUE OF MATERIAL.		
SCRAP VALUE OF SPOILED MATERIAL.		
VALUE OF MATERIAL LOST BY SPOILING.		
TOTAL LABOR LOST BY SPOILING.		
OVERHEAD CHARGES ON LABOR		
TOTAL LOSS.		

CHARGED TO ORDER NO.	CREDITED TO ORDER NO.

FIG. 11—SPOILED WORK REPORT CARD (BACK).

manufacturing work progresses the orders for assembling certain groups of related parts will be made. As this work is nearing completion the orders for erecting will be made; and in due time those for testing, painting, or whatever finishing work is needed. Usually orders will not be issued until necessary to commence work or to order material for it.

All material is "drawn from the store room," whether actually in that room or stored elsewhere, but accounted for as "in store." This will include castings and similar rough stock, as well as purchased parts and small materials; and from the finished parts store room the parts manufactured in the plant. Fig. 7 shows the form for the requisition used to cover all these classes of material. It will require the approval of the superintendent or his assistant, and will be signed by the individual presenting it when he receives the articles called for. The store keeper. This form provides spaces for a description of the articles required, the date wanted and approval of the purchase. Also, for the purchasing clerk for, "from whom ordered;" dates ordered and expected; and the date received and signature of receiver. The card is sent to the purchasing clerk, who orders the articles, makes the proper entries, and sends it to the store keeper who will sign and return it when the articles are received and checked. Occasionally there is good material left over after an order is completed. This will be returned to the store room on the card form, Fig. 9, where it will be credited to the proper order and the card sent to the cost clerk.

Spoiled work will be reported by the foreman or inspector who discovers it, using form Fig. 10, explaining the defect and its cause. On the back of this card is printed the form Fig. 11, for accounting for the cost of the parts spoiled. The foreman to keep accurate copies of these messages.

The time keeping system is as follows: All employes' time is kept by

NO. _____

NAME _____

TOTAL TIME _____ HOURS RATE _____

TOTAL WAGES $ _____

WEEK ENDING _____ 190 _____

IN	OUT	IN	OUT	IN	OUT	LOST TIME
M. A.M. 6 57	M. P.M. 12 00	M. P.M. 12 55	M. P.M. 6 03			
TU. A.M. 7 01						

THE IRON TRADE REVIEW

FIG. 12—IMPROVED FORM OF TIME CARD FOR USE IN A RECORDING CLOCK.

the employe himself registering his time in a recording time clock. Every employe, regardless of the work he does or the department he works in, registers a "day time card," at the beginning and the ending of both the forenoon and afternoon session of work. The time thus recorded is

ORDER NO. _____

DATE _____

EMPLOYEE NO. _____

MACHINE NO. _____

ARTICLE _____

OPERATION _____

DAY		IN	OUT	IN	OUT	TOTAL
F	A.M.					
	P.M.					
S	A.M.					
	P.M.					
	P.M.					
W	A.M.					
	P.M.					
T	A.M.					
	P.M.					

TOTAL HOURS, _____ MIN. ____

RATE, _____

AMOUNT, _____

THE IRON TRADE REVIEW

FIG. 13—JOB TIME CARD FOR RECORDING CLOCK.

for the purpose of making up the pay roll. For non-productive or indirect labor and for such labor as must be done by the day this card will be as in Fig. 12. By the use of these cards it is not necessary to make up the pay roll in a book or on sheets, as the cards form an economical and satisfactory substitute and can be conveniently filed for future reference.

All employes working on productive work, that is, on any hand or machine operation directly upon the product, use, in addition to the day time cards "job time cards," Fig. 13, which contains all the necessary data for making up the cost of labor on job orders for any particular parts, or operations on a part. The use of these cards is as follows: The foreman receiving sub-production orders for work will assign it to such men or machines as he desires by filling out the blank at the top of the card. He is provided with a wall rack containing pockets, or "clips," for all the men of his force and as fast as he fills out the cards he will place them in the proper pocket bearing the man's name, being careful, if there is more than one card for a man, to keep the card at the front which represents the next job which he desires the man to work upon. By this method the foreman has an opportunity to plan the work of his department in advance of the needs and to keep the men always busy and no one waiting for a job.

When a workman has finished his work upon a certain job card he will "ring it out," and take from the wall rack the next card bearing his name. This he will "ring in" and go on with the work whether the foreman is within call or not. If his job runs but an hour or two, or through several days he will use the same card until the end of the pay roll week, when he will ring it out and be provided with a new card bearing the same entries at the top, except as to date, and continue with this until the job is completed, or the week ends. When the card is rung out it is dropped into a box marked "Completed Jobs." The use of job time cards will not interfere with the use of day time cards, both being used simultaneously by all productive workmen.

The job time card gives the number of the machine as well as of the workman, and as each machine has its hourly rate, and each man an hourly overhead burden in addition to his rate of pay, as previously explained, it is readily seen that with correctly registered time cards the labor charges on an order are much simplified and may be made with much confidence and accuracy.

If the work is to be done on the premium plan, a time card, Fig. 14, is used. While the face of this card is quite similar to that shown in Fig. 13, it has an additional form printed on the back as in Fig. 15. This blank provides for complete information in relation to the job. It gives the order number and date; number and name of the workman; and the department in which he is working. This is followed by name and number of the part upon which the work is being done and the machine to which

PREMIUM TIME CARD

No.

WEEK ENDING _____ 190

ORDER NO. _____

NAME _____

DAY	FORENOON		AFTERNOON		OVERTIME		LOST TIME
	IN	OUT	IN	OUT	IN	OUT	
MON.							
TUE.							
SAT.							
SUN.							

USE THIS TIME CARD FOR THIS JOB AND ORDER NUMBER ONLY

THE IRON TRADE REVIEW

FIG. 14—FRONT OF PREMIUM TIME CARD. 3⅜ x 5½ INCHES.

PREMIUM WORK CARD

ORDER NO. DATE

MAN NO.	MAN NAME	DEPT.
PART NO.	PART NAME	MACHINE

QUANTITY	OPERATION	TIME	WAGES	PREMIUM	TOTAL

STANDARD TIME	MAN RATE	PREMIUM RATE

INSPECTED _____ INSPECTOR

APPROVED _____ FOREMAN

THE IRON TRADE REVIEW

FIG. 15—PREMIUM WORK CARD ON BACK OF TIME CARD.

it belongs. In the central portion of the card the number of pieces, etc., is the "quantity" column; and a brief description of the work under "operation." Below this is the standard time, which has been previously determined by accurate time studies and records, or by analysis of operations; and the man rate and premium rate is entered. The time record being stamped on the front of the card, as heretofore described, and the labor completed, the work and the card is turned over to the inspector, who inspects it as to workmanship and number of pieces, and makes such corrections and remarks as may be necessary, in red ink. He will then sign the card and send it to the cost clerk, who will fill in the time, which he computes from the stampings on the front of the card; the wages; the amount of premium earned and carry out the totals in the proper columns in the central portion of the card. He will then pass it to the foreman who will sign it, making it the authority for premium payment in addition to the workman's day pay, after which it will be sent to the pay clerk.

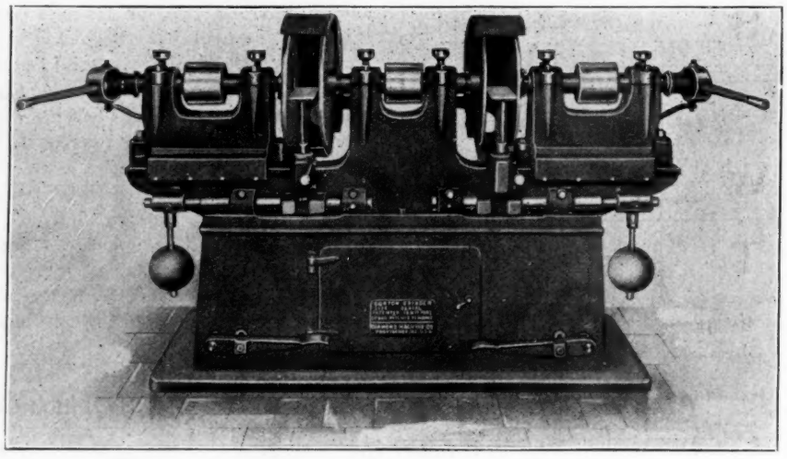
If piece work or the bonus system is used a similar method of accounting for labor will be proper. The bonus system is preferable to either the piece work method or the premium plan and should be used wherever the nature of the work renders it practicable. It is adaptable to all classes of work for which these methods may be used and to some classes of work in which they could not be easily handled. While these systems necessarily complicate the work of cost keeping they are valuable in vastly increasing the efficiency of men and machines, and consequently the output of the concern, and the success of the enterprise.

It should always be remembered that the entire scheme of shop management including organization plans, shop methods, wage systems, time systems, cost systems, accounting methods and all the component plans that go to make up the complex scheme of handling manufacturing problems should combine for the one purpose of raising the efficiency of men and machines and so increasing the output without a corresponding increase of direct or indirect expenses. The realization of these conditions is the measure of successful management.

The directors of the New Haven Iron & Steel Co. at a recent meeting took no action on a dividend.

A NEW FOUR-DISC GRINDER.

The accompanying illustration shows a new four-disc Gorton grinder built by the Diamond Machine Co., Providence, R. I. This machine combines two double disc grinders in a single machine, thus effecting a saving of space, belting, countershafting and power. It operates with a minimum amount of handling of the work, and is especially adapted for grinding, in two stages, work having parallel sides or sides at a slight angle. One pair of discs is utilized for roughing and the second pair for finishing. Operated in this way, two workmen are necessary. The machine has two swivel heads and two sliding tables, both of which swivel and which can be clamped at any angle up to 10 degrees. This permits of slight angles to be ground at a single setting.



FOUR-DISC GORTON GRINDER.

Either head may be moved back to accommodate work of any length up to 12 inches, or it may be removed entirely, in order to use one end of the machine as a single end grinder. The discs may be brought up by hand power or foot power, or both at once. If desirable, the foot lever may be left off, although it does not interfere with the regular hand operating device. The machine is provided with two dust exhaust hoods. The tables are counterweighted.

While the machine was originally designed as a regular disc grinder, a chuck with an emery ring may be used for heavy grinding, if necessary. One set of chucks may be used on one end of the machine for roughing work, which may be finished between the pair of discs at the opposite end.

The principal dimensions of the machine are:

Height from floor to center of spindle	40 inches
Size of base	27 x 69 inches
Distance between discs, each end	10 to 12 inches
Micrometer adjustment for feed	0.001 inch
Heads swivel	10 degrees
Speed of spindles	1,800 R. P. M.
Net weight	3,200 pounds

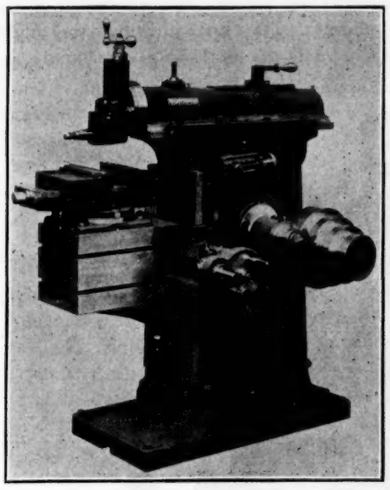
Builds Gas Producers.—The Industrial Power Co., Milwaukee, manufacturer of the Atkinson automatic gas producers, has been sold to a recently organized Wisconsin corporation, Industrial Gas Power Co., with offices 621-622 Caswell block. The officers of the new company are: President and treasurer, W. O. Jones; vice president, C. J. Atkinson; assistant treasurer and secretary, H. K. Cowen.

Mr. Jones was, for a number of years, vice president and purchasing agent of the Plano Mfg. Co., and after the organization of the International Harvester Co., of which the Plano concern was one of the original five constituent companies, he was made general manager of the purchasing department. Both Messrs. Atkinson and Cowen have been connected with the Industrial Power Co. since its organization. The company will continue to manufacture the Atkinson gas producers, of which there are a large number in successful operation at the present time.

Max Wieselthaler of Schuschardt & Schutte, Vienna, Austria, was a caller on the machine tool manufacturers of Cincinnati during last week. The object of his visit was to keep in touch with his American connections and to procure information regarding new lines under construction and proposed improvements in machine tools. Mr. Wieselthaler reported conditions in Austria as improving. He will spend several days in Cincinnati.

A NEW SINGLE-GEARED CRANK SHAPER.

The accompanying illustration shows a new 15-inch single-geared crank shaper, which has just been placed on the market by the American Tool Works Co., Cincinnati, to meet the demand for a shaper which would utilize to the utmost modern high-speed



15-Inch Single Geared "American" Crank Shaper.

tool steel. The shaper illustrated has been designed for use as a manufacturing tool, as well as for tool room use. It possesses a number of features of interest, chief among which is the cross feed for the table. This is of new design, and is variable and automatic, with a range from 0.008 to 0.200-inch. This range may be obtained while the machine is running, by means of the knurled knob in the slotted crank near the top of the column, which is conveniently operated and accurately set by means of the graduations and pointer reading on either side of zero. The construction is such as to render any change in adjustment unnecessary when the position of the rail is changed. The feed is operated by means of the vertical rack shown behind the rail, which meshes with a gear on the same shaft as the gear meshing with the cross feed screw gear. This rack is reciprocated by means of the connecting rod from the slotted crank shown at the head of the column. The feed is thrown in or out and reversed by means of the knob shown on the large crank gear. These gears are covered for protection and the large gear is provided with a squared rod for a crank, making it possible to move the table quickly by hand.

The column is deep and wide and tapers slightly toward the top, giving the machine a neat and substantial appearance. It is braced internally, so as to withstand the heaviest strains, and projects both front and rear at the top to provide a long bearing for the ram. The ram itself is braced by internal ribs, and has long, wide bearings on the column, with a continuous taper gib with screw attachment for taking up wear. Its stroke is positive, and there are four rates of speed, which range from 20 to 65 strokes per minute. The length of stroke may be changed at will without stopping the machine. The stroke may be positioned by the device located on the head of the ram, which may be operated with the machine in motion. A pointer on the ram travels along an index, and shows the length of stroke, as set. The ram has a practically uniform rate of speed during its entire stroke, and is provided with an exceptionally quick return. The gearing ratio and wide belts are designed so as to furnish ample power for work for which this machine is adapted.

The head is operated at an angle within an arc of 100 degrees, and has a convenient and efficient locking device. The down slide is fitted with a continuous taper gib, with an end screw attachment for taking up wear. The down feed is of unusual length and the feed screw is provided with an adjustable graduated collar reading to 0.001-inch. The table is of the box form with three T-slots on the top and both sides, and is thoroughly braced internally. It is readily detachable from the rail. The apron is also provided with a continuous taper gib with end screw attachment for taking up wear, and has three T-slots on the face for clamping work when the table is removed. The cross rail is of box form and strongly ribbed. It is exceptionally long and gives the table a wide, horizontal range of travel. It is bolted to the column by clamps and bolts of such design that the cross rail cannot drop away when the binder bolts are loosened. It is provided with a telescopic elevating screw.

The rocker arm is made in double section at the top, and with the large opening through the column permits a shaft 2½ inches diameter to be passed under the ram for key-seating. Larger shafts may be key-seated, by setting over the table to allow the shaft to pass outside the column and using the head set on an angle.

The ram slides are provided with felt wipers at both front and center of the column to assist in good lubrication and to prevent oil from dripping down over the front of machine. An oil pocket is cast integral with the column at the rear to store any waste of oil, which may be drawn off at any time. Oil is stored in a pocket cast integral with the arm, with suitable means of distribution, insuring thorough lubrication of the crank pin and sliding block in the rocker arm. All gears in the machine are cut from the solid, and are of coarse pitch and wide face. The bevel gears are planed from the solid and the pinions in the driving train are cut from bar steel. The length of stroke of the machine is 15¼ inches and the down feed to the head is 6 inches. The table has a vertical and horizontal travel of 14 and 18 inches, respectively.

TWO LINE BUCKET FOR COAL AND ORE HANDLING PLANTS.

A coal and ore handling bucket that can be manipulated entirely by two wire ropes and a two drum hoist situated at some central point, has been designed by W. C. Weeks, of the International Contract Co., Seattle, Wash. The bucket is intended for excavating and handling coal, ore, earth, gravel, broken stone or any comparatively loose material. It is adapted to handling and leveling coal or ore massed in large piles and possesses a number of unique features which suit it to this class of work. It is known as the Weeks "two-line" bucket.

Fig. 1 shows a bucket of this type used for coal leveling on the stock

Fig. 1—The Weeks "Two Line" Bucket.

piles of the Washington Water Power Co. at its Spokane steam plant. At this plant the bucket levels and handles all the coal required for generating steam for the operation of two Curtis turbines of 16,000 horsepower total capacity. A similar

bucket is used for unloading coal from gondola cars.

The bucket illustrated is 5 feet long, 4 feet wide and 2 feet 6 inches deep. The sides are made from ⅜-inch plates and the bottom is ⅝ inch in thickness. The bottom is fitted with five hardened steel chisel pointed teeth.

The operation of the bucket is illustrated in Fig. 2, which shows the position of the bucket when digging into the material. When the bucket is first started the stress exerted on the pulling line A, is transmitted through the chain C to the yoke B. As the yoke is riveted to the sides of the bucket, the latter is turned on its teeth as an axis, thus digging into the material. As the bucket fills the stress is automatically transferred from the yoke B to the draw chains D which finally receive all the pull. In this condition, with the bucket full, there is no strain on the yoke B and no tendency to dig or catch. The teeth are beveled on the under side so that they ride freely. The bucket

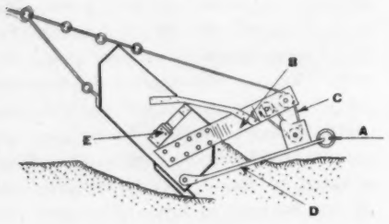


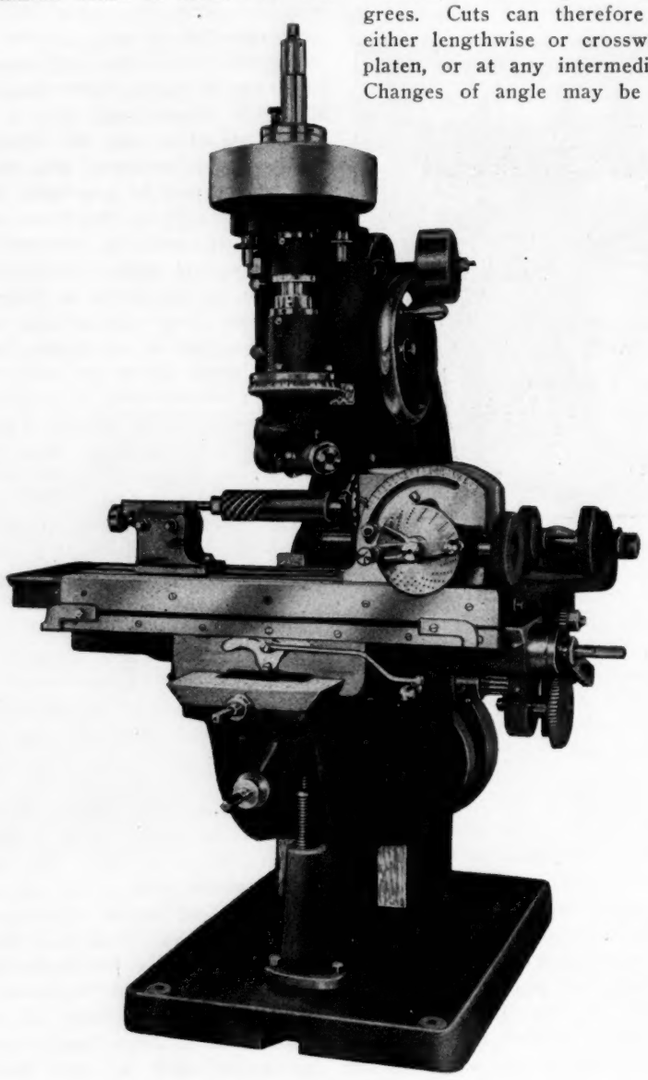
FIG. 2—SKETCH OF WEEKS "TWO LINE" BUCKET, ILLUSTRATING ACTION OF ROPES.

is dumped by drawing it up a suitable slide, provided with rails on which the propections E ride. The stress on the ropes being relieved, the weight of the load turns the bucket on E and the material falls out. After dumping the bucket is hauled out by the back line which passes over a sheave located at some convenient point in the rear. Two wire cables are used to handle the bucket. These are wound on a two-drum hoist, driven at the Washington Water Power Co.'s plant by a 25-horsepower motor. The main haul cable for a 2-yard bucket is ⅝ inch diameter and the back haul ½ inch.

The buckets are built in various sizes from ½ to 2½ cubic yards capacity. In the larger sizes the bottoms are made ¾-inch thick, to more effectually withstand the wear. A number of these buckets are now in use at various points on the Pacific coast.

NEW ATTACHMENTS ON THE BECKER VERTICAL MILLING MACHINE.

In connection with general improvements in the design and construction of the vertical millers manufactured by the Becker Milling Machine Co., Hyde Park, Mass., there has just been introduced a horizontal attachment which in connection with



HORIZONTAL MILLING ATTACHMENT FOR BECKER VERTICAL MILLER.

the new dividing head gives those machines a wide field of usefulness. This particularly includes the cutting of spirals, hobs, racks, etc., on the same machine that does the heaviest class of milling work.

The horizontal spindle, which is driven by the vertical spindle through bevel gears, carries the cutter at a point marking the intersection of the center lines of these spindles. At the point of connection to the sliding head the adjoining surfaces are graduated so that the attachment may be set and clamped at any desired angle to the center line of the platen. This feature makes possible its use on a plain machine for the cutting of spirals, and makes it universal in its scope.

As the cutter is set at the intersecting axes of the two spindles it is evident that the attachment may be revolved horizontally through 360 degrees. Cuts can therefore be made either lengthwise or crosswise of the platen, or at any intermediate angle. Changes of angle may be made instantly without disturbing any other adjustment on the machine.

The vertical milling machine with the horizontal attachment possesses maximum rigidity. In fact a standard heavy milling machine is by this simple device turned into a universal machine in which no adjustment of the table is necessary, hence the full value of the long platen is secured with its extended support. The excessive depth of throat in the vertical machine is of special benefit in providing ample space for the work-

ing of large pieces in any position on the platen. All of these features have a part in extending the utility of this type of machine.

The dividing head used on these machines is of the standard Becker design and construction, driven through a train of gears similar to that employed on the horizontal machines built by the same company. With the complete equipment of dividing head and horizontal attachment the standard vertical milling of medium size, it becomes a most useful tool room machine, although equally serviceable for the general work of the shop.

18-INCH BY 8-FOOT CONE-DRIVEN SCHELLENBACH LATHE.

The machine shown in Fig. 1 is an 18-inch by 8-foot, cone-driven Schellenbach engine lathe built by the John B. Morris Foundry Co., Cincinnati, O. This machine is of the same general design as the geared-head lathe made by this company, the only difference being the cone-head instead of the geared-head.

The drive is arranged direct to the face plate, as is the case with the geared-head machine. The drawing, Fig. 2, is a sectional view of the head-stock. The spindle A has a flange at its right end and receives the face gear B, which is doweled and screwed to it. This face gear B has internal threads and receives the face plate or the chuck. The chuck plate C fits the counterbore of the chuck and is bored to fit the end of the spindle and threaded on the outside to screw into the face gear B. When pressure is exerted against the chuck, it clamps the flange of the spindle tightly between the chuck plate C and the face gear B. This arrangement eliminates all torsional strains within the spindle when running in back gear. Clutch teeth D are formed upon the spindle and engage the clutch E, which is splined to the cone pinion sleeve G. This clutch is operated at the back end of the head-stock by a spring seated plunger, which passes through the cone pulley. The plunger is provided with a knurl with a detent pin in it for holding it out of engagement.

The head shown is provided with a three-step cone, the largest diameter being 12 inches for 3-inch double belt, and there are two changes of back gearing, making in all nine changes of speed with a single speed of the countershaft. The countershaft, however, is provided with double friction pulleys, and where reversed motion is not needed, it may be driven at two different speeds, thus giving the spindle six open belt speeds and 12 back gear speeds. The back gear is operated with the eccentric shaft in the ordinary manner. The overhang of the chuck, from the face of the jaws to the front spindle bearing, is not so great as with the ordinary type of lathe. All of the gearing on the head is enclosed and is of coarse pitch.

This machine is provided with a quick change device giving a range of threads from 2 to 112 per inch. It has a double plate apron and a special feature for rough chasing threads by the ordinary rack feed in place of the lead screw, the object being to preserve the screw and to use it for only accurate chasing. A single wrench operates every adjusting screw on the machine, including the tightening of the tailstock on the shears. The cabinet legs have hinged doors with latches operated by knobs.

This machine is also made in 14-inch and 16-inch sizes, and with the plain system of change gears as well as with the quick change, as shown.

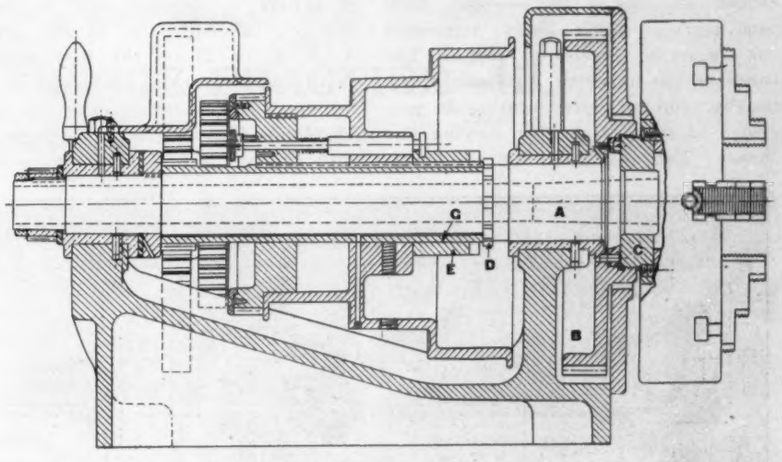


FIG. 2—SECTION OF HEAD OF SCHELLENBACH CONE TYPE ENGINE LATHE.

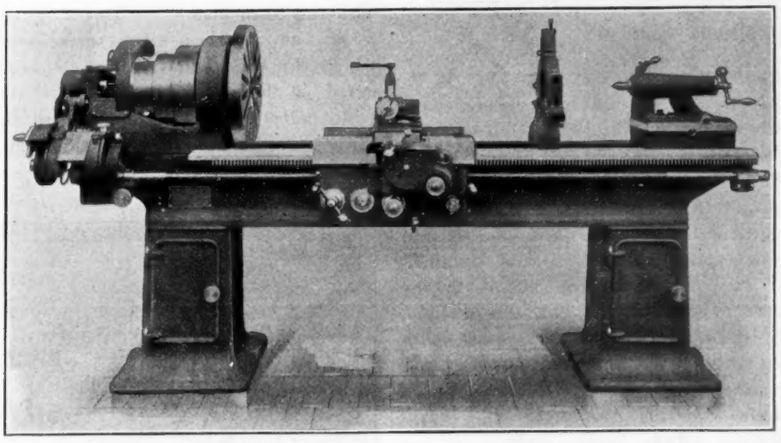


FIG. 1—SCHELLENBACH 18-INCH BY 8-FOOT CONE TYPE ENGINE LATHE.

Steel Works for Japan.—A British consular report states that the Japan Steel Works has begun the erection of a large plant west of Mororan. The capital is stated to be $5,000,000. The company will manufacture guns, ammunition and armor plate for ships, and probably eventually the ships themselves. The company is intended to be an addition to the Kure naval arsenal. Iron ore at first will be obtained from Great Britain, but ore is stated to exist in large quantities in the sand along the shores of Volcano bay and also in the Kamaishi district. The company is erecting an experimental blast furnace of 30 tons daily capacity at Wanishi, and has ordered a briquetting plant in Germany to cost $40,000.

A NEW UNIVERSAL BORING MACHINE.

The accompanying illustrations show features of a new universal boring, milling and drilling machine, which has just been designed by the Universal Boring Machine Co., Hudson, Mass. The machine is of the box pattern type, having a bed on which are carried the movable table and carriage, these always remaining in the same horizontal plane. The head of the machine is movable vertically, and an outer bearing is provided to support the bar moving this head. The alignment for this outer bearing with the head is maintained by an arrangement of spiral gears, one of which is operated from the elevating shaft, and lays within the bed.

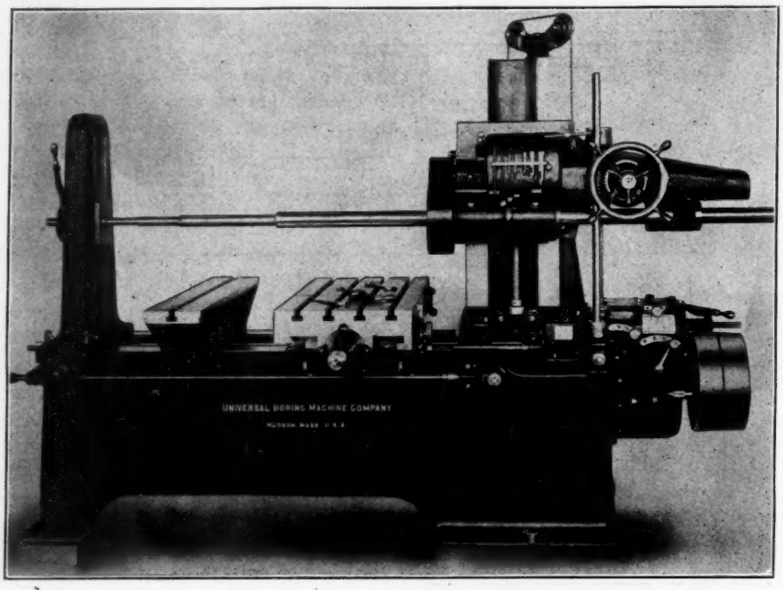


FIG. 1—NEW UNIVERSAL BORING MACHINE.

The various spindle speeds are all obtained through gearing. A speed box is used in which eight speed changes are obtained, which are doubled in the head. The speed box is the lower half of the box shown at the right hand end of the bed of the machine, and is shown in detail in Fig. 2. It contains nine gears and a gear segment having two studs, one above and one below its pivotal point. There is also a rocker gear operated by a hand lever.

The operation of the gears within the speed box is as follows: Four gears A, B, C and D are keyed together and slide upon the constant speed shaft direct connected to the tight and loose pulleys. A gear E runs upon the upper stud of the gear segment shown in greater detail in Fig. 3. This meshes with the gear F on the shaft running through the center of the segment. The gears G and H on the lower stud of the segment are keyed together and one meshes with the large spur gear J also keyed to the shaft through the center of the gear segment. By rocking the segment in one direction, one set of speeds is obtained by meshing the gear E with any of the gears A, B, C or D on the first motion shaft, and by rocking the segment in the opposite direction another set may be obtained by meshing the gear H with the gears on the first motion shaft. The various gears, A, B, C and D are brought into mesh with either of the gears on the gear segment studs, by sliding them along the shaft by means of the handle K, and, at the same time, by rotating the segment by means of the gear L and handle M. The 16 speeds obtained by this means and by means of the change gears in the head range from 15 to 200 revolutions per minute, with a speed of 230 revolutions per minute at the constant speed shaft, carrying the tight and loose pulleys. The loose pulley is of smaller diameter than the tight one, in order to relieve the strain on the belt when the machine is idle. This loose pulley is cast with a receptacle in its hub filled with cotton waste saturated with oil with wicking run through the bearing. It is stated that this pulley will run from 18 to 20 months on a single oiling.

The machine is provided with power feed in all directions. The table and cross feeds are power operated, as is the boring bar feed. The head also may be raised or lowered by power. These feeds are all regulated by the two feed levers. The feeds are constant speed irrespective of the spindle speeds and range from ¾ to 5½ inches feed per minute. Nine feeds are obtained with each spindle speed, giving a total of 144, which range from 0.006 to 0.340 inch per spindle revolution.

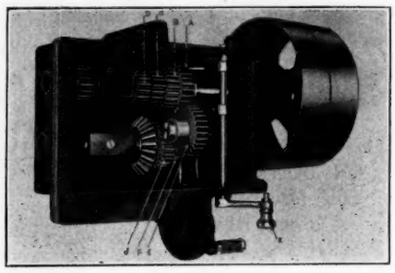


FIG. 2—INTERIOR OF SPEED BOX.

All feeds are reversed with the same lever, and the motions of these feeds bear the same relation to each other at all times. With the reverse lever down, the head feeds up, the table feeds away from the operator and the boring bar feeds toward the outer bearing supporting post. In addition to these feeds, the head has a single up and down fast travel, enabling the boring bar to be brought to a point quickly without manipulating the hand crank. Hand adjustment is provided with the head also.

On one of the bearing surfaces on which the head slides is a scale graduated in inches. The zero of this scale indicates the point at which the center of the spindle is in line with the top of the table. These graduations enable the head to be moved to a point within ⅛ of an inch of that required. Exact setting can then be quickly obtained. By the use of this scale, considerable time can be saved in operating the machine.

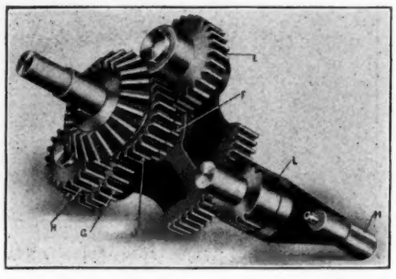


FIG. 3—SEGMENT GEAR AND STUD GEARS IN SPEED BOX.

The boring bar has a feed of 27 inches and can be reset by a clamped bearing, so that a total of 55 inches of motion can be obtained. The hand wheel is placed at a point where it is convenient for the operation and setting of boring bars, and its position allows the operator to be close to his work.

The head of the machine is at the right hand end, which permits boring and milling to be done without reversing the motion of the spindle. It also allows the operator to watch and operate the machine more conveniently. The spindle is driven from a point nearest to where the work is being done, and enables heavy cuts to be taken in milling. Provisions are made on the face of the spindle to bolt or fasten the cutters usually used on heavy milling machines. All revolving parts, as shafts, studs, etc., are of crucible steel and ground to size. The principal bearings are bushed and the entire machine is heavily built. The feed and speed boxes are bolted together, and to take the entire arrangement from the machine, it is only necessary to remove six bolts and pull out the feed and speed shaft when the box can be removed from the machine.

MODERN OFFICE PRACTICE.—III.

Issuing Stationery to a Large Office.

By Ridgley Newcomb.

There are many iron and steel plants employing large numbers of men requiring a great many different printed forms, comprising reports from the different departments to the head office. It is not unusual for there to be 1,000 different forms required to run a large steel plant, particularly when everything printed has a number, as should be the case. Even envelopes, which have printed addresses on them, or plain envelopes with the return card of the company in the corner, should have numbers in the upper right hand corner, so as to be covered by the postage stamp.

Stationery supplies will cost anywhere from $1,000 to $25,000 a year, and it is, of course, a one man job to keep track of them. Some plants have found it to their advantage to have a small printing office of their own to do the plainer sort of printing. The bridge and construction department of the Pennsylvania Steel Co., at Steelton, Pa., has a printing plant whose equipment cost about $3,000. It has been found a judicious investment.

After the forms are in the office, it is still a problem to maintain an even stock, guard against possible shortages and keep all the departments supplied. One very satisfactory way and one that is in use at the present time, is similar to a perpetual inventory system, by means of cards.

Form 151—150M—8-9-07.

SUPPLY DEP'T..... PLEASE DELIVER TO BEARER. 190

QUAN.	DESCRIPTION	PRICE	VALUE

CHARGE TO SIGNED.....

STORE REQUISITION

Fig. 1—Requisition for Material; Used for Stationery.

First, it is necessary to have ample shelf room for the forms. In the office where this system is in use, they have 20 cupboards, each with six shelves. The cupboards are numbered as are the shelves.

Each form has a number and a card is made for each, showing the number of form, its title, the cupboard and shelf on which it may be found, as well as the name of the printer who made it and its cost. This last is not always necessary, for, as a rule, buying the forms is something the stationery clerk has nothing to do with. He merely notifies the purchasing agent to order another supply of forms, furnishing several samples so that a copy may be sent to each printer to bid on.

The forms are all put up in pads of 100 sheets each and each pad is considered as a unit. Hence, an entry of "50" means 50 pads. This perpetual inventory card is filed numerically according to the form number. This form is shown in Fig. 1.

STATIONERY INVENTORY AND INDEX.

FORM NO. 227 FOUND IN 4th CUPBOARD 6th SHELF.

TITLE OF FORM Delay Reports

MAKER 1st Lot by Taylor. COST PER M. 2.75

Received	Delivered	Received	Delivered	Received	Delivered	Received	Delivered	Received	Delivered	Received	Delivered
50 pads 11/2/07	10-11/4										
	10-12/3										
ordered	20-1/7										
	10-3/1										
50-4/10											

Fig. 2—Perpetual Inventory Card for Stationery, Size 6 x 4½ Inches.

Form 237	Battery Report.

Form 227	Delay Reports.

FIG. 3—INDEX CARDS SHOWING TITLES OF FORMS.

By this it will be seen that when a requisition (Fig. 2) is received for a supply of any given forms, the clerk merely turns to his index to see where the forms are to be found and at the same time notices how much of a stock he has and enters on the card the amount sent out. By this means, a shortage is guarded against.

As the forms also have a title, a small alphabetical index is run, the cards in this merely showing the form number. It will frequently happen that the title of a form will be known and the number forgotten. By this additional card index, the number is quickly ascertained and the clerk turns to his index proper. These cards are shown in Fig. 3.

Contract for Columns.—There is a perceptible revival in the iron trades in San Francisco. The Union Iron Works was awarded the contract for the cast iron columns for the new pier in the harbor. The total weight of the castings approximates 600 tons, and must be delivered within 40 days from the day the contract was awarded. It is the largest job for cast iron bases let to a San Francisco shop for some years, but is a mere beginning, as the entire water front is to have steel piers in place of the wooden ones it has now. The same shop also recently closed a contract for three 60-foot boats to be built for the army transport service in San Francisco, and also secured the contract for the caisson for the new dry dock at the Mare Island navy yard.

The Carnegie Steel Co. has closed a contract to furnish two Harveyized armor plate vaults for the First National Bank, Pittsburg, which will be installed in the new bank building now being erected by that institution. These vaults will be 14 x 25 feet in dimensions. The Carnegie Steel Co. has also sold a large armor plate vault to the Old Colony Trust Co., Boston.

NUMEROUS CONTRACTS FOR MILL EQUIPMENT.

A number of notable contracts for mill equipment have recently been completed by the United Engineering & Foundry Co., Pittsburg. These include the continuous blooming, rail and billet mills for the Indiana Steel Co., Gary, Ind.; rail and structural mills for the Bethlehem Steel Co., South Bethlehem, Pa.; rail mill for the Tennessee Coal, Iron & Railroad Co., Ensley, Ala.; rail mill and sheet bar mill for the Republic Iron & Steel Co., Youngstown, O.; blooming and sheet bar mill for the Inland Steel Co., Indiana Harbor, Ind.; blooming and sheet bar mill for the Andrews Steel Co., Newport, Ky., and blooming mill for the C. Pardee Works, Perth Amboy, N. J.

Numerous interior views showing these and other important installations of blooming, plate, universal, sheet and tin, continuous merchant and guide bar mills, and auxiliary machinery, including tables, manipulators, transfers, shears, saws, etc., built by the company are illustrated in the handsome new general catalog for 1908 just issued by the company. General designs of the largest rail and billet mills in the world, which were built by the company for the Indiana Steel Co., Gary, Ind., and of other recent important installations, are shown. The Gary rail mill consists of four 2-high stands of 40-inch rolls, one 3-high stand of 40-inch rolls and seven stands of 28-inch rolls with stationary, lifting and tilting tables. This machinery is driven by direct connected electric motors including the apparatus for lifting and tilting the tables. The billet mill consists of four 2-high stands of 40-inch rolls and five 2-high stands of 32-inch rolls. This mill is of the continuous type and is driven entirely by direct connected electric motors. The tables, transfers, shears, saws, etc., for these mills were also supplied by the company.

The volume is beautifully bound in cloth and is profusely illustrated, standing throughout as a splendid example of the lithographic art. A word on the company's organization is given. The company is a consolidation formed in 1901 of the Lloyd-Booth Co., Youngstown, O., the Frank-Kneeland Machine Co., Lincoln Foundry Co., McGill & Co., all of Pittsburg, and the Chilled Roll Foundry Co., Vandergrift, Pa. Subsequently the plant of the Mahoning Foundry & Machine Co., Youngstown, O., was acquired, and the several plants were enlarged and improved. A number of views of the company's properties are set forth in the catalog.

The present officers of the company are Isaac W. Frank, president; C. H. Booth, first vice president; G. G. Small, second vice president; Chas. E. Satler, secretary; Edward Kneeland, treasurer; Otis H. Childs, chairman of the executive committee; F. I. Ellis and F. C. Biggert Jr., engineer, and K. C. Gardner, sales engineer.

Will Discuss Gas Power.—The gas power section of the American Society of Mechanical Engineers will open the season of professional meetings Tuesday evening, Oct. 13, at the Engineering Societies building, New York City. H. L. Doherty, chairman of the meetings committee of the section, will present a report for discussion outlining plans for future work and there will also be a discussion of standards to be used in gas power work. Two papers will be read, one by E. A. Harvey on gas producer plants, with data upon costs, performance, etc., and one by N. T. Harrington, giving the results of tests to determine the loss of fuel weight in a freshly charged producer, due to increase of ash contents in the fuel bed.

Price Recovery Succeeds Slump.

The partial demoralization that prevailed the week previous extended over into Monday of last week, when prices declined from two to five points at the last hour, and closed at the lowest. The weakness was generally ascribed to the continuation of the previous week's "political scare." All grades of copper were reduced, and wheat also declined on the heavy primary receipts, the largest in the history of the trade. Tuesday's market was feverish, breaking and rallying sharply, the close being marked by both gains and losses. Copper was again lower. A less active market was apparent Wednesday, stocks generally recovering and closing higher. A strong recovery distinguished Thursday, with trading active. Shares were active on Friday also, but quite irregular. The price of copper metal arose in both New York and London. Saturday's market was inactive and somewhat irregular, and prices closed at the lowest of the day.

The weekly bank statement showed a large decrease in loans, due possibly to stock market liquidation, and it showed also a decrease in surplus reserve, but only of $174,100. The statement of actual conditions of clearing house banks showed loans decreased $2,548,500; deposits decreased $4,535,800; and the percentage of actual reserve 28.56, a decrease of 0.20 per cent. Non-member banks and trust companies showed loans decreased $1,451,400; total deposits increased $2,245,100, and the percentage of reserve 33.8, an increase of 0.01 per cent. Call money loans for the week averaged 1¼ per cent, and time money continued unchanged and dull. Clearing house exchanges for the week, in the United States, showed a decrease of 2 per cent over the preceding week, and an increase of 7 per cent over last year. New York's total alone showed an increase of 18.8 per cent over last year.

General business conditions in Europe appear to be improving. France and Germany continue to accumulate gold, and the Bank of England appears to be simply maintaining the gold it has already gained. Last week's grain shipments abroad preclude any immediate prospect of gold exports from this country for the present.

Commercial failures for the week in the entire country were 279, compared with 246 the preceding week, and 194 the corresponding week last year. A large reduction in the number of idle freight cars was reported for the two weeks ending Sept. 16, a total reduction of 50,562, cutting the surplus down to 170,652, the smallest of any date since Dec. 11, last year. The number of shares dealt in during the week was 5,577,800, compared with 4,663,400 the preceding week and 2,357,150 last year. Bonds, exclusive of government bonds, were sold to the amount of $18,674,000, compared with $15,709,000 the preceding week, and $8,903,000 the corresponding week last year.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo Sept. 26	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	10⅞	+ ⅜	Sept. 3	19.820 000			
Allis-Chalmers pr	31¼	+ ¾		16 150.000	7 cum	1¾ Q.	Feb., 1904
American Can	5¼	− ¼	Feb. 3	41 233 300			
Am. Can pr	57⅞	− ⅜		41.233.300	7 cum	1¾ Q.	Oct., 1908
Am. Car & Foundry	39¾	+1¾	June 25	30.000.000		½ Q.	Oct., 1908
Am. Car & Fdy. pr	102½	− ½		30 000.000	7 n. c.	1¾ Q.	Oct., 1908
American Loc.	40¾	+1	Oct. 20	25.000.000	5	1¼ Q.	Aug., 1908
American Loc. pr	101½	−2½		25 000.000	7 cum	1¾ Q.	Oct., 1908
American Ship	48	−1	Oct. 14	7 60 .000	4	1 Q.	June, 1908
American Ship pr	100½	.....		7.900.000	7 n. c.	1¾ Q.	Oct., 1908
Am. Steel Foundries, ctfs	9	.....	Oct. 6	15 810 000			
Am. Steel Foundries (new	29⅞	− ⅛		14,247.400	6 cum	2½	Aug., 1904
Barney & Smith	40	.....	June 2	2.000,000	4	1 Q.	Sept., 1907
Barney & Smith pr	110	.....		2 500 000	8 cum	2 Q.	June, 1908
Bethlehem Steel	22	+2½	April 7	14,862,000			
Bethlehem Steel pr	46½	−2⅞		14 968 000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	35⅞	− ¼	March 17	45.000 000*	6	1½ S. A.	Aug., 1908
Cambria Iron	45⅜	− ⅞		8,468.000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool	25	.....	Feb. 17	6,145.800	4	1 Q.	Oct., 1907
Colorado Fuel	33⅝	+1	Oct. 19	34 235 500		3½	April, 1902
Crucible Steel	6¾	.....	Oct. 21	24.578 400			
Crucible Steel pr	44⅜	−2⅝		24,436.500	7 cum	1 Q.	Dec., 1907
Empire Steel	5	.....	Feb. 26	1,254.770			
Empire Steel pr	48	.....		2.500,000	6 cum	3 S. A.	July, 1908
Fay & Egan	100	.....	Feb. 18	1,000.000	6	1½ Q.	Aug., 1908
Fay & Egan pr	110	.....		1,000 000	7 cum	1¾ Q.	Aug., 1908
General Electric	140¼	+ ¼	May 12	65,167.400	8	2 Q.	Oct., 1908
Harbison-Walker	13	+1	Jan. 20	18.000 000		½	Oct., 1907
Harbison-Walker pr	74½	− ½		9.6 0.000	6 cum	1½ Q.	July, 1908
International Pump	21¾	− ¾	June 2	17.787 300		1	April, 1905
International Pump pr	79¾	.....		13,835.000	6 cum	1½ Q.	Aug., 1908
Lackawanna Steel	35	.....	March 11	34.971 400			
Lake Sup. Corp	6	.....	Oct. 7	40.000.000			
New York Air Brake	74½	+ ½	June 18	8 012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	130	.....	Feb. 5	8.000 000	6	1½ Q.	Sept., 1908
Niles-Bement-Pond pr	100	.....		2 000.000	6 cum	1½ Q.	Aug., 1908
Otis Elevator Co.	38	.....	March 16	6 156,600		1½ S. A.	April, 1908
Otis Elevator Co. pr	90	.....		5 449.500	6 n. c	1½ Q	Oct., 1908
Penn. Steel	50	.....	May 11	10.750 000			
Penn. Steel pr	104½	.....		16.5 0 400	7 n. c.	3½ S. A.	May, 1908
Pittsburg Coal Co.	11	− ¼	Feb. 10	28,853 400			Nov., 1906
Pittsburg Coal Co. pr	39	−4¼		27,980.800	7 c.	1¾	April, 1905
Pressed Steel Car	31½	+ ½	Feb. 19	12,500,000		3	Aug., 1904
Pressed Steel Car pr	94	.....		12.500.000	7 n. c.	1¾ Q.	Aug., 1908
Pullman	160½	−2	Nov. 11	100 000 000	8	2 Q.	Aug., 1908
Railway Stl. Spring	38	+3	March 5	13,500.000	4	2 S. A.	April, 1908
Railway Stl Spring pr	100⅛	.....		13,500.000	7 cum	1¾ Q.	Sept., 1908
Rep. Iron & Steel	22	+ ¼	Oct. 21	27.191.000			
Rep. Iron & Steel pr	78	− ¾		20,416 900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	61	−1	March 11	10.000.000	5	1 Q	Sept., 1908
Sloss-Sheffield pr	103	.....		6.700 0 0	7 n. c.	1¾ Q.	Sept., 1904
U. S. Pipe & Fdy	24	− ½	June 24	12.500.000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy pr	72½	+1		12 500,000	7 n. c	1¾ Q.	Sept., 1908
U. S. Steel	45½	+ ½	April 20	508.302,500	2 n. c.	½ Q.	Sept., 1908
U. S. Steel pr	108¾	+ ¾		360,281.100	7 cum	1¾ Q.	Aug., 1908
U. S. Steel 5's	101⅝	− ⅜		463.798.000	5	5 A.	
Va. Iron, Coal & Coke	58	−2	Nov. 17	9 073 880			
Westinghouse Elec.	75	+3½	June 24	23 933 200	10	2½ Q.	Oct., 1907
Westinghouse Air Brake	103	−1¾	Oct. 6	14.000,000*		2½ Q.	Oct., 1908

Par value of shares, $100, except those starred (*), $50

Copper Stocks.

New York.—Amalgamated Copper closed 74½, a net gain of 1½.

Boston.—Butte Coalition closed 24½, a net gain of 1; Calumet & Arizona closed 116, a net loss of 3½; Calumet & Hecla closed 640, no change; North Butte Mining closed 81⅝, a net gain of 1⅜; Quincy Mining closed 90, no change.

Financial Notes.

The American Brake Shoe & Foundry Co. declared the regular quarterly dividend of 1¾ per cent on preferred and 1 per cent on common stock, payable Sept. 30; United States Smelting, Refining & Mining Co., the regular quarterly dividend of 1¾ per cent on preferred, and 1 per cent on common stock, payable Oct. 15; the Railway Steel Spring Co., a dividend of 1 per cent on common for the half year, payable Oct. 22, this being a reduction of 1 per cent from the previous disbursement made April 20; Manning, Maxwell & Moore, the regular quarterly dividend of 1½ per cent, payable Sept. 30.

NEWS FROM MANY INDUSTRIES

New Buyers:—

W. B. Hale, Theo. T. Jeune, J. O. Rodgers, T. S. Dunlap and J. M Shallenberger are the incorporators of the Steel Fabric Tire Co., Cleveland, capitalized at $25,000.

The Range Boiler Insulator Mfg. Co., Portland, Ore., has been incorporated by Karl Olston, Albert B. Olston and Otto Olston, with $25,000 capital stock.

A. S. Ruhl, Robert W. Ruhl and C. S. Bratingham have incorporated the H. C. Marsh Co., Rockford, Ill., to manufacture tools and machinery. The company has a capital of $25,000.

The Crescent Machine Works, Evansville, Ind., has been incorporated, with an authorized capital of $5,000. The directors are Joseph W. Osborn, Benjamin J. Nussenbein, Fred L. Stolz and Julia L. Pelz.

A charter has been granted the Grand Crossing Tack Co., Chicago, capitalized at $875,000, to manufacture and deal in ore, pig iron and all metal products. Those interested are Edward W. Hutchinson, O. N. Hutchinson and A. W. Martin.

The August Dreifus Mfg. Co. has been incorporated with $25,000 capital stock, to manufacture laundry machinery. The stockholders and incorporators are: August Dreifus, A. Lowensohn and David Lowensohn, Monticello, Ind.

A. P. Abbott, Peter J. Johnson and M. W. Cagney are the charter holders of the Federal Machine Mfg. Co., Chicago, which has been incorporated with $10,000 capital stock, to manufacture and deal in machinery and other merchandise.

The Balance Pressure Rotary Engine Co., Buffalo, N. Y., has been incorporated to manufacture engines, boilers, blowers and pumps, with a capital of $50,000. The incorporators are William M. Hoffman and B. F. Hoffman, 214 Maryland street; Ed. A. Piall, 1095 Perry street, all of Buffalo.

The Indiana Oil Engine Co., Indianapolis, has been incorported by Stuart Dean, Charles S. Dean and Nathan T. Washburn, the company having $4,500 capital. It is the intention to manufacture an engine operating with oil fuel as soon as a plant can be established.

A charter has been granted to the Doehler Die Casting Co., Brooklyn, with a capital of $20,000. The incorporators are: Herman H. Doehler, 84 Buckingham road, Brooklyn; William J. Leddell, 18 Broadway, New York, and Otto A. Schrowder, 210 Woodward avenue, Germania Heights, N. Y. The company was organized for the purpose of casting metals, finishing machine parts and making dies.

S. H. Truitt & Co., Camden, N. J., has been granted a charter to manufacture wrought iron, cast iron pipe, castings, engines and fittings, with a capital of $50,000. The incorporators are F. R. Hansell, George H. B. Martin and John A. MacPeake, Camden, N. J.

The Engineering Service Co., New York City, civil, electrical and mechanical engineering, has been chartered with $5,000 capital stock by Marcus A. Josephi and Robert Josephi, 28 West Ninety-fifth street, and Gerard B. Werner, 319 West Ninety-fourth street, all of New York City.

The Howard Steel Co., Akron, O., capitalized at $100,000, has been granted a charter to engage in the manufacture of steel, wholesale and retail. The incorporators are: John G. Simms, Akron, O.; Harry A. Williams, Canton, O.; W. L. Colwell, Robert E. Erdman and S. W. Beers, Buffalo, N. Y.

William J. Morgan Co., Boston, to make steel, iron and other metals, has been incorporated with a capital stock of $15,000. The officers named in the charter are: President, William J. Morgan, 11½ Chase street, Lynn, Mass.; treasurer, Charles A. Hardy, Gleason road, Wayland, Mass.; clerk, Ward F. Porter, 51 Ferry street, Everett, Mass.

The American Metal Stamping Works, Worcester, Mass., to engage in a metal stamping business, has been granted a Massachusetts charter, with a capital of $10,000. The officers are: President, Isaac Grodberg; treasurer, Adolph Hirsch, both of 43 Mt. Pleasant street; and vice president, John E. Nilson, 17 Hormon street, Worcester.

The High Standard Steel Co., New York City, to manufacture steel balls, ball bearings, bushes, boxes, cups, vehicles, machinery, etc., has filed articles of incorporation with $100,000 capital stock. The incorporators are: Mark Birmingham, 87 St. Nicholas place; William P. Snyder, 250 West 112th street; D. Walton Birmingham, 2419 Seventh avenue, all of New York.

Articles of incorporation have been filed by the Aero Ventilator Mfg. Co., Rochester, N. Y., to manufacture metal ventilators, fireproof doors and windows, etc., with a capital of $30,000. The incorporators are J. Hicks Crippen, 341 West avenue; John D. Ripsen, 152 Bronson avenue, both of Rochester, and Isaac L. Adelman, 150 Nassau street, New York City.

New Construction:—

The Dwiggins Wire Fence Co., Anderson, Ind., is erecting an addition to its factory.

The Adolph Leitelt Iron Works, Grand Rapids, Mich., has taken out a building permit for a one-story brick foundry building to cost $4,500.

The Decatur Cornice & Roofing Co., New Decatur, Ala., is planning to build an addition to its plant 135 x 135 feet.

The American Steel & Wire Co. is hurrying forward the construction of a large addition to its plant at Anderson, Ind.

The Howatt Mfg. Co., Sharon, Pa., has let the construction contract for its proposed manufactory to Wallis & Carley, of Sharon. The plant will be located south of the town and will manufacture hanger hardware.

The Osborn Engineering Co., Cleveland, is preparing plans for a large factory building for the Goodyear Tire & Rubber Co., Akron, O. Bids will be received the first week in October.

The Diebold Safe & Lock Co., Canton, O., has petitioned the city council to vacate a portion of a street upon which its plant abuts for the purpose of enabling the company to proceed with the construction of an addition to the plant approximately 160 x 300 feet.

The Erie Foundry Co., Erie, Pa., has awarded the contract for a large machine shop and a blacksmith shop according to plans drawn by the Osborn Engineering Co. The Henry Shenk Co. gets the contract for the general work and the Pittsburg Steel Construction Co. the contract for the structural steel.

The Globe Machinery & Supply Co., Des Moines, Ia., has begun the construction of a factory, warehouse and boiler shop, as it has outgrown the present buildings. The new structure will have a frontage on Seventh street of 184 feet and a depth of 132 feet. It will be of brick and steel, one-story, of mill construction.

The Wisconsin Steel Co., subsidiary

to the International Harvester Co., has broken ground for a wire mill on the east side of Torrence avenue, Chicago, between 106th and 108th streets. The mill will be divided by 107th street. It is planned that the construction work will be finished by spring.

The Sibley Machine Tool Co., South Bend, Ind., power drills, advises that the new addition recently noted will be a gray iron foundry, 90 x 152 feet, one story, and will include a grinding and milling room. All new equipment has been purchased, and includes traveling crane, exhaust tumbling mills, water and cinder mills, etc.

The National Iron & Wire Co. has received the contract for the structural steel for a fireproof calender building for the B. F. Goodrich Co., at Akron, O., the award being made by the Osborn Engineering Co., Cleveland. The National Concrete Fireproofing Co. secured the contract for the general work. The structure will be 60 x 220 feet, five stories and basement.

The W. S. Tyler Co., Cleveland, brass, steel and iron wire work, has let the contracts for a new factory building to be erected at St. Clair avenue and East Fifty-sixth street. The building will be 53 x 100 feet, four stories high, of brick and steel with floors of mill construction. The general contract has been let to Andrew Dall & Son, and for the steel work to the Forest City Steel & Iron Co. Work will be commenced at once.

The American District Steam Co. has begun rebuilding its plant at Tonawanda, N. Y., which was destroyed by fire a month ago. The buildings will be of reinforced concrete, and the entire plant is to be ready for occupancy Jan. 1. The buildings will include a foundry building 100 x 143 feet, a dry kiln, 37 x 135 feet, bin building 28 x 143 feet, a machine shop 152 x 260 feet, and a main structure of 75 x 175 feet.

The Pfau Mfg. Co., Cincinnati, has abandoned its plans to build at Idlewild as announced some time ago and has purchased a tract of land on Langdon avenue, south of the Norwood site, and near the Schreiber Iron Works. The architect has been instructed to have blue prints ready for bids by July 1, 1909. The proposed new plant will include a modern brick factory, the principal building being four stories, 50 x 340 feet. In the rear will be placed an electric and power plant, a brass foundry 50 x 75 feet, boiler and engine room 50 x 60 feet, and six concrete kilns, the total dimensions of which will be 27 x 110 feet.

The Seymour Mfg. Co., with offices now in Philadelphia, advises that it is building a large new plant to be used for manufacturing a new line of goods, apart from the grain cradles, scythe snaths, etc., which it has been producing in the past year. The company also advises that it is now employing about 25 men regularly, and hopes before long to double this force.

The Reliance Iron Works, F. A. Sustins, proprietor, Stevens Point, Wis., advises that the new machine shop which is being built will be two stories, of brick, 45 x 65 feet, and will be used for a general machine shop as well as an auto garage. Tools will be needed for auto repairing, as well as an elevator.

General Industrial:—

The Pittsburg Axle Works, Pittsburg, has increased its capital stock from $5,000 to $50,000.

The Miami Cycle & Mfg. Co., Middletown, O., has increased its capital stock from $500,000 to $600,000.

The Clark & Norton Mfg. Co., a New York corporation, has taken out a permit to engage in the manufacture of engines at Robinson, Ill., with a capital of $25,000.

The Crandall Packing Co., of New York, packing and engine room supplies, has filed articles of incorporation to do business in Illinois, with offices at 71 West Washington street, Chicago.

The Cleveland Rock Drill Co., Cleveland, whose incorporation was recently noted, advises that no plant will be built or equipment needed for the present at least and that it will probably be a selling company.

A committee representing the Merchants' Association of Turner's Falls, Mass., is conferring with the officers of the Universal Tool Co. of Springfield, Mass., with a view to having the company locate its plant at Turner's Falls.

The city of Cleveland, O., will employ a part of the old workhouse as a municipal brass foundry, as a part of the water works department. Small valves and other brass fittings needed by the water works department will be made.

Workmen have begun razing the old two-story frame building at Third avenue and Ross street, Pittsburg, formerly occupied by the main office of the Jones & Laughlin Steel Co. The old structure which is directly in the rear of the modern new office building, now the seat of the company's executive activities, has filled a service of 35 years. The site of the old building will be leveled and fenced in and will not be utilized for building purposes at present. Eventually a modern warehouse may be erected.

The Georgia Iron Works, Augusta, Ga., founders and machinists, advises that while the roof of the foundry was recently burned, it is at work rebuilding and expects to be turning out castings this week. Its machine shop is running full force.

The Janson Steel & Iron Co., Columbia, Pa., manufacturer of bar iron and steel, advises that it has contracted for all the material and machinery required for enlarging its plant. The machinery contracted for includes engines, shears, cranes, etc.

The trustees of the Southern Steel Co. have filed a petition in the United States district court at Birmingham, Ala., setting forth the financial condition of the bankrupt company, and asking for instructions as to what shall be done for the best interests of creditors.

The Bellevue Pipe & Foundry Co., Bellevue, O., has filed a schedule in the United States district court at Toledo, in which it places its debts at $41,099.74, and assets at $124,483.33. The schedule was filed in response to an involuntary petition in bankruptcy by creditors entered Aug. 30.

Three new directors were elected at the annual meeting of the Pittsburg Safe Co., Pittsburg. These were Andrew Haas, Frank Sherrick and John D. Sherrick, who with the following old members compose the board: J. D. Madigan, I. W. Rutter, J. A. DeWitt, A. J. Cochran, Joseph McConnell and F. L. Norton.

The new owners of the Penn Shovel Co.'s plant at Warren, O., Robert and Matthew Slater and Major Joy, all practical mill men of McKeesport, Pa., are making extensive repairs to the plant, with a large force of carpenters and iron workers. It is anticipated that the mill will be ready to start work within three weeks.

The Maryland Steel Co., Sparrow's Point, Md., has been awarded the contract for constructing three naval colliers for the United States navy. The contract price was $479,000 each. President Frederick W. Wood announces that work will be started immediately on the colliers, and that they will furnish work for about 1,000 additional workmen for about one year.

The Eagle Belting Co., Cincinnati, has filed an assignment in the insolvency court to Ben T. Archer.

The assets are estimated at $30,000, and the liabilities at $48,000. The receiver said that recent large improvements coming at a time of business depression had embarrassed the company in securing ready cash, but that under the direction of the court the business would be conducted without interruption and all claims met.

The Sessions Foundry Co., Bristol, Conn., has bought the foundry department of the Franklin-Moore Co., Winsted, Conn. The Franklin-Moore Co. started the foundry three years ago, to supply its carriage bolt factory. President William E. Sessions, who made the purchase, said that the business will be removed to Bristol and merged with the Sessions Foundry Co.

The Twin City Boiler & Sheet Iron Works, recently organized at Bristol, Tenn., with a capital of $20,000, has installed some of its machinery and commenced operating. The officers of the company are Henry Ehret, president; I. P. Oakes, vice president; J. B. Tilley, secretary and treasurer.

The creditors of the Brown-Cochrane Co., Lorain, O., at a recent meeting named a committee to carry on negotiations for possible consolidation with another concern engaged in the manufacture of gas engines. The report of expert accountants showed the book assets to be $515,000, and liabilities, $519,000, not including the capital stock of $140,000.

The Dundee Brass Mfg. Co., capitalized at $50,000, was recently organized at Dundee, N. Y., at a joint meeting of the Dundee Business Men's Association and the proposed stockholders. The following stockholders were elected temporary directors of the company: Henry Fernandough, E. L. Barley, Charles Goble, T. D. Beekman and Dr. C. C. Harvey. A proposed foundry site has been decided upon.

Harlow C. Farrell, receiver of the Steel Foundry Co., Cincinnati, has filed his report with the insolvency court, in which he finds that the liabilities of the company are $99,356.30, and its assets are appraised at $229,240.36, including buildings, $46,191.17; machinery, $84,965.32; power equipment, $21,636.13; office furniture, $675.50; tools and supplies, $3,392; materials and fixtures, $38,112.50; accounts receivable, $23,119.84; castings on hand, $147.90. The company was incorporated in December, 1905, and its capital stock is $200,000, all paid up.

The Fillmore Avenue Foundry & Iron Works, Inc., Buffalo, N. Y., has secured a contract to build a melting furnace, and annealing ovens for the new plant of the Torrance Malleable Iron Co., Voorheesville, N. Y. This plant is to be equipped with the Buffalo company's new imported "Truesdell" system for annealing and melting iron. It is expected to have the plant ready to take off the first heat about Nov. 1. H. Truesdell announces that he has entirely severed his connection with the Cyclone Grate Bar Co., of Buffalo, and is now associated with the Fillmore Avenue works at Buffalo.

At the annual meeting of the Toledo Machine & Tool Co., Toledo, O., the following directors were elected: E. P. Breckenridge, S. D. Carr, Henry J. Hinde, L. J. Hinde, and Graff J. Acklin. The directors chose Mr. Breckenridge, president; H. J. Hinde, vice president and works manager, and Mr. Acklin, secretary, treasurer and general manager. Mr. Hinde, the new vice president, was formerly superintendent of the plant, and L. J. Hinde was traveling salesman for the company. The annual report of the company shows that it had a most successful year, notwithstanding the depression, and has continued to pay its regular dividends to stockholders.

With the arrival from the Carnegie Steel Co.'s mills at Homestead, Pa., of six carloads of material at the Lorain, O., yards of the American Ship Building Co., for the first of the big freighters recently ordered by the Pittsburg Steamship Co., the yards began to take on signs of renewed activity. It will be several weeks before the laying of the keel of the vessel, but the material will arrive from now on probably daily. The company is also pushing work on the foundation for the new boiler shop, and the structural steel work will be commenced shortly, since it is planned to build the boilers for the new vessels in this shop.

Fires:—

The Acme Steel Co., Chicago, suffered a 60 per cent loss Sept. 19, with insurance aggregating $12,000.

The horse shoe mill of the Old Dominion Iron & Nail Works, on Belle Isle, near Richmond, Va., Sept. 17, was destroyed by fire, entailing a loss of about $15.000 to the Gould interests, the owners, covered by insurance.

The plant of the Monarch Brass Mfg. Co., Ltd., at Port Colborne, Ont., was seriously damaged, Sept. 16, the loss reaching probably $60,000. The fire started in the melting room, and although discovered by the night watchman, could not be extinguished since the water works system had been disabled during the day.

Among other buildings and establishments damaged by a conflagration Sept. 21, at Chelsea, Mass., was the Hill-Rowland brass foundry, which was seriously damaged.

Trade Notes:—

The Ruud Mfg. Co., Pittsburg, manufacturer of Ruud instantaneous automatic water heaters, has just opened another branch office located at 1407 Brown-Marx Bldg., Birmingham, Ala. This office is in charge of S. W. Hemphill. In spite of general adverse conditions, the Ruud Mfg. Co. is able to report a larger business for the eight months of 1908 than for the same months of 1907.

TRADE PUBLICATIONS.

PULVERIZERS.—The American Pulverizer Co., St. Louis, is distributing a 12-page folder describing its pulverizers, air separators and revolving screens for pulverizing clay, shale, coal, etc. The pulverizer is known as the ring-hammer type, and is stated to be new. It is made in six sizes, with eight rings and eight hammers and 30 rings and 30 hammers in the largest and smallest sizes, respectively, with a capacity of 15 to 20 and 100 to 120 tons per hour of coal, respectively.

CHAIN BELTING.—The Chain Belt Co., Milwaukee, is distributing a folder presenting specifications and price lists of its interlocking riveted pintle chain belt, together with a number of testimonials from users.

TRANSFORMER STEEL.—A brief history of the material used in transformer construction is given in pamphlet 3687 issued by the General Electric Co., Schenectady. This publication also calls attention to the company's type H transformer.

TEST METERS.—The Thomson direct-current test meter, type CB2, is described in bulletin 4615 issued by the General Electric Co., Schenectady. The meter is furnished in two distinct ampere ratings, each with single 110-volt, or double 100 and 220-volt potential windings. The bulletin also contains price lists.

DOOR CHECKS.—P. & F. Corbin, New Britain, Conn., describe the Corbin universal liquid door check and spring in a 28-page catalog, 3½ x 6 inches. The various styles of checks are illustrated in position on doors, and price lists of complete checks and parts are given.

KEROSENE ENGINES.—Kerosene and gasoline engines are described in a 12-page booklet, 5½ x 7 inches, distributed by the Reading Oil & Gas Engine Co., Reading, Pa. The engine is of the two-cycle, upright valve type, with make-and-break electric ignition. It is designed for use where a small engine is desired.

FORKS, HOES, ETC.—Catalog H, just issued by the American Fork & Hoe Co., is a handsome book of over 200 9 x 12 pages. It illustrates and describes a varied and extensive line of forks, hoes, shovels, rakes, hooks, etc., for all uses and services. Among tools of interest to the iron and steel line may be mentioned coke forks, stone forks, mortar hoes, street hoes, mill refuse rakes, etc. The catalog is handsomely printed on heavy paper and well illustrated.